
DOWNTOWN STREETScape ELEMENTS DESIGN GUIDELINES Edition 1

September 2003

Revised December 22, 2004



for
METROPOLITAN DEVELOPMENT and HOUSING AGENCY
Metro Nashville • Davidson County

acknowledgements

The project team would like to thank the following individuals, who comprised the Steering Committee, for their input throughout the entire process. With their continued support, we look forward to the continued progress and the implementation of these guidelines.

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1.0 introduction

Downtown Nashville has experienced strong revitalization and growth over the past decade and now has the momentum to experience continued significant redevelopment. As change occurs, controlled enhancement of the public realm becomes important to manage. It is vital to create public spaces where people are encouraged to socialize, relax, shop, see and be seen. Many great cities are known for offering wonderful public spaces and special destinations. Those special public spaces help to enliven and enrich the urban experience. Several factors may attribute to the effect of these special places within the public realm. Some are perceptual, such as the feeling of safety for pedestrians, clean and attractive surroundings, mixed uses that will attract a strata of different users, inviting places to sit and watch the activity, and by seeing and being a part of interaction between the public realm and the businesses. On the other hand, ordinary places tend to be – forgettable. Uninteresting public rights-of-way will not invite people into the interaction. Should one need to visit a business within such a corridor, there isn't generally anything that would encourage them to stay and continue to interact with the space.

Over the years, many of Nashville's downtown streetscapes have become cluttered with a smorgasbord of differing types of streetlights, utility poles, benches, seating and pavement types. There is little along these public rights-of-way that signifies an area's identity or special sense of place – with the possible exception of "The District" – Nashville's historic entertainment district. There, the consistent use of streetlights and brick sidewalks that relate contextually with the surrounding historic fabric create a unified experience. The best urban streetscapes can help unify areas within a large downtown by using consistent and planned arrangements of streetscape elements. Users become more comfortable when they can sense the beginnings and endings of a district. Pedestrians and vehicular users alike are able to recognize even subtle differences in lighting, architectural style, banners, and street tree plantings.

One potential goal then in the selection of streetscape materials is to complement the surrounding architectural character. It is important that these materials be suited to the scale and character of the district and that each of these elements help to build a comprehensive and cohesive streetscape vocabulary. When this is achieved, areas begin to have a sense of place that contribute to an overall attractive downtown.

Metro Nashville Mayor Bill Purcell identified a need to re-address Nashville's downtown public realm and to create an approach to direct the evolution of this vital component of the urban environment. Like many other cities of Nashville's size and age, incremental and small-scale change has shaped the downtown experience. With the stimulus of continued redevelopment activity, a clear agenda is needed for a cohesive unifying streetscape vocabulary – enter the ***Nashville Downtown Streetscape Elements Design Guidelines***.



2.0 process overview

A Steering Committee was established at the beginning of this process. The committee members, as representatives of their agencies and departments, affirmed the decisions and selections made by consensus. The committee was comprised of representatives from the Mayor's Office, the Directors of Metro Development and Housing Agency (MDHA), Metro Planning Commission (MPC), Nashville Civic Design Center (NCDC), Metro Public Works (MPW), technical experts from Nashville Electric Service (NES) and the consulting Landscape Architects. Members met in an effort to build consensus throughout the inventory, analysis, and final guidelines process.

2.1 guidelines development

2.1.1 physical assessment and inventory

The study area for the Downtown Streetscape Elements Design Guidelines coincides with Metro Planning Department's Subarea 9 planning boundary. This boundary is defined by Interstate 24 on the East, Interstate 40 on the West and South, and Jefferson Street on the North. The initial phase of the development of the Design Guidelines involved a physical inventory of the existing streetscape elements that have "accumulated" within Subarea 9's rights-of-way. The following items were included in the inventory:

- ✓ existing streetlight fixture types
- ✓ traffic control poles and related fixtures
- ✓ benches
- ✓ trash receptacles
- ✓ bollards
- ✓ bike racks
- ✓ sidewalk pavement types
- ✓ crosswalk pavement types

Streetlights

In 2003, Nashville Electric Service (NES) maintained five of the nine different streetlight fixtures, (plus variations on those styles), inventoried in the study area. Standardization of poles and fixtures is a Metropolitan government goal for all of the study area.

Traffic Controls

The study area inventory included traffic control pole and mast arm styles and related light fixtures. There are currently six different types of traffic / pedestrian signals styles and variations of the pedestrian crosswalk signals within Subarea 9. MPW's annual subcontractors maintain these elements.

Benches and Trash Receptacles

The types of benches and trash receptacles in the study area rights-of-way are limited in quantity and styles. While trash receptacles are more prevalent throughout the study area, the numbers of benches are minimal. All of these are currently maintained by MPW.

Bollards and Bike Racks

The use of bollards and bike racks is extremely limited in the Downtown study area. Several types and styles of bollards and bike racks were identified on adjacent private property.

Sidewalk and Crosswalk Materials

Various types of sidewalk and crosswalk materials have been utilized throughout Subarea 9. The material types consist of varieties of concrete, brick pavers, and concrete pavers. All of Metro's sidewalks and crosswalks are maintained by MPW.

Additional Guidelines Phases

Because the intent of initial phase of the Streetscape Elements Design Guidelines was to lay a foundation for the more comprehensive guidelines to come, subsequent phases of the guidelines will require a thorough inventory of the items listed below and provide recommendations for those items:

- ✓ Streetlighting: special lighting
- ✓ Streetscape Furnishings: tree grates, kiosks
- ✓ Paving: accessible ramps, pedestrian bulbs
- ✓ Civic art
- ✓ Signage
- ✓ Transit Shelters

2.1.2 existing plans and planning studies

Following the physical inventory of selected streetscape elements, a review of previous planning efforts was undertaken to assess sub-boundaries that may have been established within the downtown study area. The districts or sub-boundaries identified are listed below and shown in figure 1:

- ✓ BiCentennial Mall Master Plan, dated 1998
- ✓ The Plan for SoBro, dated 1997
- ✓ Subarea 9 Update, dated December 9, 1997
- ✓ Nashville-Davidson Co. Strategic Plan for Sidewalks and Bikeways, Draft dated 2002
- ✓ Franklin Boulevard Design Guidelines, dated March 30, 1998
- ✓ Rolling Mill Hill, dated June 1996 and updated in 2003
- ✓ Master Plan for the Church Street Corridor, dated January 1996
- ✓ North Nashville CDC, dated October 2001
- ✓ The Gulch Master Plan, dated 2000

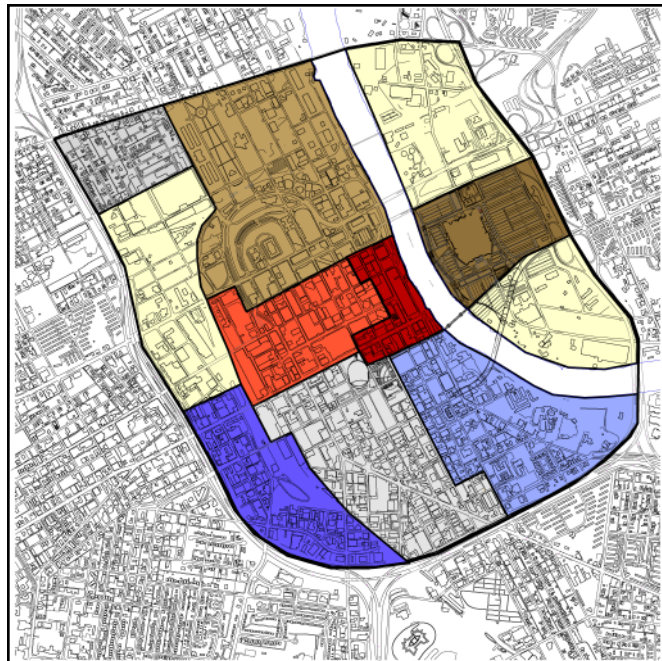


Figure 1; Generalized Sub Boundaries according to previous planning efforts

Many of these boundaries were established by previous planning studies. Also recognized were boundaries of recently developed areas such as the Coliseum, neighborhood boundaries such as Hope Gardens, and “perceived” boundaries such as downtown’s Historic District and the urban CBD.

Whenever adopted plans made recommendations for specific site furnishings for use within their boundaries, those recommendations were taken into consideration

for the Streetscape Elements Design Guidelines.

INTENT

This effort has to do with premise that the built streetscape environment of downtown is not homogeneous, but rather exhibits distinct contexts, or areas, that reflect perceivable characteristics.

Identification of existing “boundaries” within the downtown that exhibited contextual similarities would become the foundation for building a useful Design Guideline that takes design characteristics into consideration. It became obvious after evaluating the numerous and sometimes overlapping plan boundaries that, in order to make these guidelines coherent, the number of Sub-Districts had to be consolidated into a relative few.

These guidelines are flexible and based on the reference material noted above. As redevelopment continues, established boundaries for the redevelopment areas may change. Elements of these guidelines may be applied to the new districts or parts of these guidelines may be adapted in order to accommodate those future changes.

At the time of these recommendations, Gateway Bridge was recently completed and the construction of Gateway Boulevard was scheduled for completion by 2005. The Shelby Street Pedestrian Bridge Grand Opening occurred in August 2003, and the Nashville Symphony Concert Hall’s Grand Opening is expected in Fall of 2006. Other significant projects within Subarea 9 include: a new Federal Courthouse, a potential new baseball stadium for the Nashville Sounds, renovations to the Metro Courthouse and Public Square, and TPAC renovations.

2.1.3 metro policies and ordinances

Key Metro agencies and departments that have vested interests in the public rights-of-way were contacted to determine policies directly affecting the implementation of the Design Guidelines. Agencies contacted include Nashville Electric Service (NES), Metro Public Works (MPW), Metro Planning Department (MP), the ADA Title II Coordinator's Office, and the Metro Fire Marshall's Office.

LIGHTING POLICIES:

Nashville Electric Services' (NES) current lighting policy encourages adherence to the following parameters:

- ✓ Meet Illuminating Engineering Society of North America (IES) Standards
- ✓ Ease of maintenance is high priority; tool-less access
- ✓ Preference for a glass lens

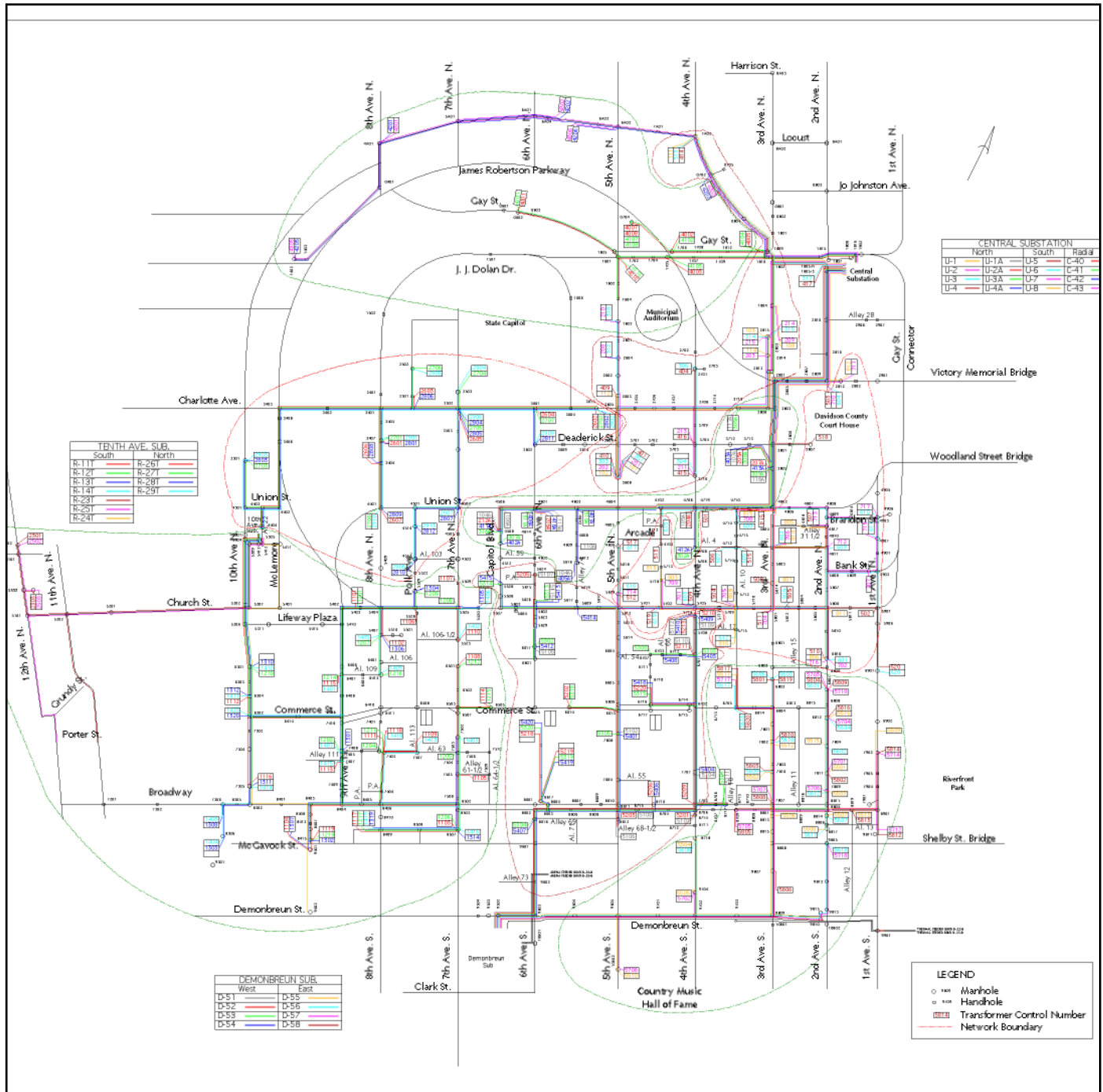


Figure 2; Existing Underground Electric Grid

LIGHTING POLICIES, cont'd:

- ✓ Utilize High-Pressure Sodium (hps) luminaries for roadway lighting.
- ✓ May utilize Metal Halide (mh) luminaries for pedestrian lighting if roadway lighting is accommodated by HPS (must receive special approval from NES and ratings from TVA)
- ✓ Special exceptions may be made for the use of metal halide luminaries to provide the roadway and pedestrian lighting in areas with high pedestrian volumes and narrow roadways, etc. **This must receive special approval from NES.**

Most of the Downtown Core is serviced by NES through an underground network as shown in the following diagram. According to NES representatives, this network utilizes old, cost prohibitive technology. Future underground service must be provided through a new separate underground system. With some exceptions, most of the areas beyond the boundaries of the existing Underground Electrical Grid are currently serviced overhead. NES intends to selectively expand to the new underground system as the need arises and on a case by case basis, though an implementation plan was unavailable in 2003. Refer to figure 2 for the extent of the existing underground system.

SITE FURNISHING POLICIES:

Metro Public Works (MPW) policies regarding site furnishings are focused primarily on location. MPW requires that all site furniture be placed in a “furnishing zone” (a.k.a. appurtenance strip, planting strip, utility strip, or buffer strip.) This zone’s width may vary depending upon the space available in the R.O.W. The furnishing zone increases pedestrian comfort by providing a physical buffer between the sidewalk and the vehicular traffic. The furnishing zone is further explained under the section entitled Design Guidelines: Street Furnishings.

The Department of Finance ADA Compliance Division, the local review entity, references and enforces the Americans with Disabilities Act Accessibilities Guidelines (ADAAG) dated 1999. Those guidelines may be found at the following website:
www.access-board.gov/ada-aba/guidenprm.htm.

Though the 1999 ADAAG is not officially adopted at the Federal level, its adoption is expected soon. The 1994 guidelines have been adopted on the Federal level and can be found at the following website:
www.usdoj.gov/crt/ada/reg3a.html#Anchor-17383.

Based on the 1999 guidelines, the ADA office enforces

the following requirements that influence the Streetscape Elements Design Guidelines:

- ✓ The placement of furnishings must maintain a 48” clear path of travel past the fixture
- ✓ 50% of all bench groups must be ADA compliant; half of this 50% must have armrests
- ✓ 50% of all bench groups must incorporate a back
- ✓ The seat height must be in the range of 17” to 19” above finished grade and must be level across the face of the bench
- ✓ 50% of all bench groups must incorporate a 36” x 48” wide clear space adjacent to the bench for companion wheelchair seating

Metro’s Fire Marshall mandates that all site furnishings must not hinder the egress of any building structure and must provide clear access to the right of way and clear access for emergency vehicles. All furnishings must be placed a minimum of 5’-0” away from a building egress. The exact dimension is dependent on the projected volume of the building’s egress capacity and must be verified by the Fire Marshall and / or Metro Public Works. All furnishings must be a minimum of 10’-0” from a fire hydrant.

pavement materials*SIDEWALK MATERIALS POLICIES:*

Previous MPW sidewalk material policy allowed sidewalk materials to be one of the following:

- ✓ White concrete
- ✓ Integral colored concrete
- ✓ Stained concrete
- ✓ Exposed Aggregate concrete
- ✓ Masonry pavers (MPW allowed the use of clay brick pavers in the areas that have existing clay brick pavers)

Current ADA policy requires that all sidewalks be constructed to the following standards:

- ✓ Maximum 2% cross slope
- ✓ A minimum clear width of 60” for unhindered path of travel
- ✓ All materials must be “slip resistant”
- ✓ The ‘clear path of travel’ must have no vertical offsets that exceed 1/4”

CROSSWALKS:

Current MPW policy for crosswalks:

- ✓ Implementation is based on need and constructability
- ✓ Must be constructed with thermoplastic stripes,

stamped asphalt, or concrete pavers

Current ADA policy requires that crosswalks:

- ✓ Must have a maximum of 2% cross slope
- ✓ Must have a minimum width of 8'-0"

2.2 analysis

2.2.1 streetlighting and furnishings

It was quickly obvious that the number of planning sub-boundaries within Subarea 9 were too numerous to utilize as an effective means of Design Guideline organization. The sub-boundaries in Subarea 9 are made up of four active master plans, three distinct districts, and several service-oriented / industrial areas that are presently excluded from any active redevelopment boundaries. The currently defined sub-districts were evaluated on a case-by-case basis to identify attributes for potential consolidation where feasible.

Some previously defined areas, such as the BiCentennial Mall and Farmers Market area, as well as the Coliseum and its surrounding parking areas, will not be affected by the Design Guidelines. These areas represent large, recently developed homogenous projects and are noted in figure 3. Changes to the streetscape elements in these areas are not a high priority nor are they economically feasible in the near term.

Some portions of Subarea 9 fall outside of the redevelopment plans and districts. Pedestrian-oriented redevelopment within these areas is not expected in the near future. This category includes predominantly service-oriented areas north of the Gulch, east of the BiCentennial Mall, south of the SoBro area, and light industrial land uses north and south of the Coliseum. It primarily accommodates vehicular activities in the public realm. In as much, the streetlighting focus for these areas is to facilitate limited fixture maintenance while addressing vehicular safety concerns. Figure 4 indicates the boundaries of this category.

As future development occurs within these areas, aspects of the guideline recommendations may be applied or modified to fit the new contextual integrity. Those areas would then be re-evaluated based on the established criteria.



Figure 3; Recently Developed Area

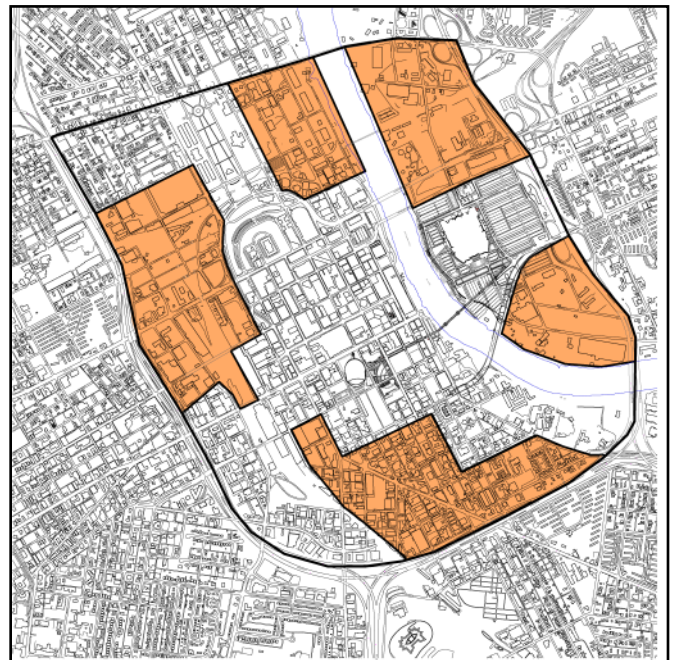


Figure 4; Primary Roadway and Safety Needs

The remaining areas in Subarea 9 indicated in Figure 5 are sub-districts where pedestrian use is comparatively moderate to intense, based on existing land use, or are targeted for pedestrian-friendly redevelopment in the near term. Pedestrian uses range from intense tourist traffic throughout the Historic District to rush hour pedestrian traffic throughout the majority of the pedestrian zone.

These zones include areas known as the Central Business District (CBD), Capital Hill, the Historic District to Gateway Boulevard, Rolling Mill Hill, the Gulch, and Hope Gardens.

The public realm of this “pedestrian-rich environment” (Pedestrian Zone) was analyzed for a specific characteristics that would help redefine the downtown into distinguishable, contextual sub-districts. Streetscape characteristics like width of R.O.W., architectural styles, scale of the buildings, types and application of building materials, types of land uses, pedestrian volume and intensity were taken into consideration. Based on these factors, there emerged three contextually different sub-districts within the pedestrian-rich environments in downtown Nashville. They were classified as contextual Sub-Districts and titled “**Traditional, Contemporary, Core and Perimeter**”. These classifications are used throughout the Design Guidelines to establish a vocabulary of streetlight fixture types and site furnishing elements in downtown.

DEFINING CONTEXTUAL SUB-DISTRICTS: traditional • contemporary • core • perimeter

The first contextual classification is **Traditional**. Within this sub-district, one may expect to find traditional building materials, fine grain development with architectural richness, buildings with historical significance and narrow- to-moderate widths of R.O.W. This area encompasses all of Hope Gardens, Rutledge Hill and Rolling Mill Hill residential areas, and the Historic District from 1st Avenue to 5th Avenue, from Deaderick Street (and around the Courthouse) to Demonbreun Street. The Church Street corridor from 1st Avenue to 9th Avenue and Capital Boulevard are also included within the traditional classification zone. Figure 6 indicates the Traditional zone.

The second classification is **Contemporary**. This area, commonly referred to as “the Gulch”, is a redevelopment project that is adaptively reusing existing and historic structures while also incorporating contemporary in-fill. The Gulch redevelopment district will include pedestrian-friendly mixed use such as retail, office, residential, and restaurants. This area is adjacent to the railroad lines and historic Union Station and falls within the Arts District Urban Design Overlay (UDO).

Within this area, one may also expect to find fine grain development and traditional building materials, but used in innovative contemporary ways. The architectural fabric is decidedly modern. This Contemporary Sub-District is delineated in figure 7.

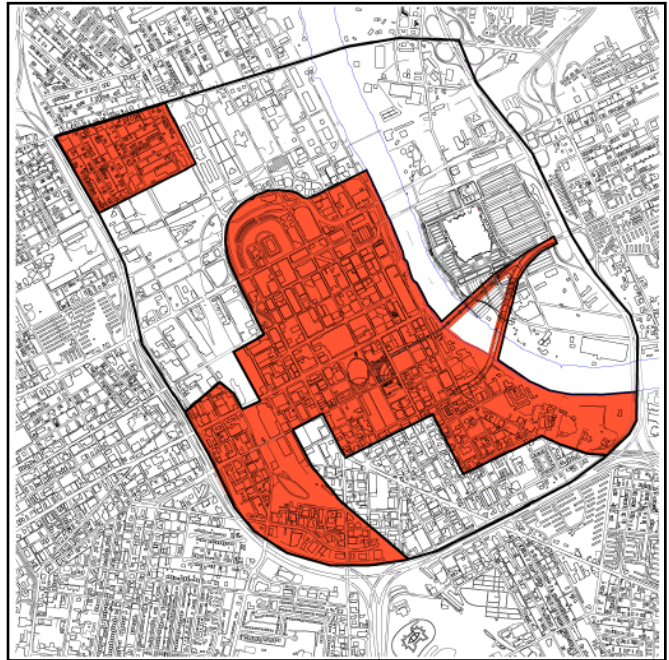


Figure 5; Pedestrian Zone

The third classification within the Pedestrian Zone is the **Core**. This broadly defined area has diverse characteristics, tends to have a mix of monumental architecture, non-contiguous pockets of rich pedestrian-scaled streetscapes, combined with background structures in a variety of architectural expressions. Traditional building



Figure 6; Traditional Sub-District in the Pedestrian Zone

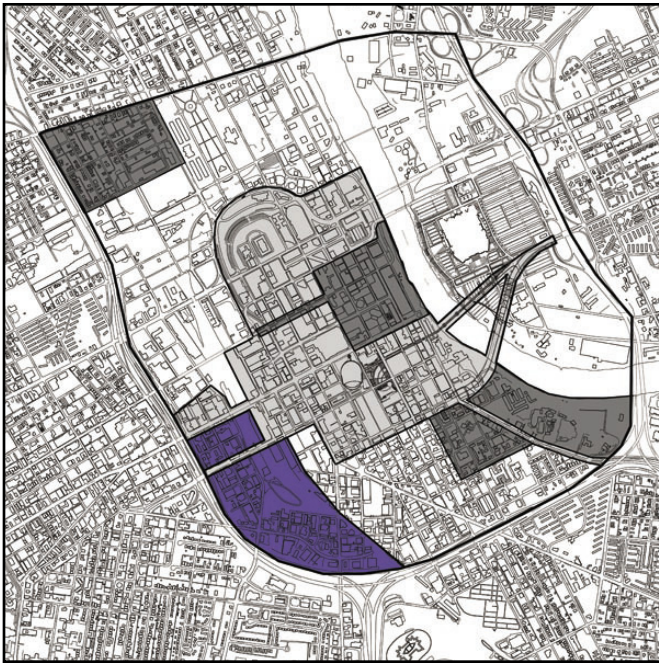


Figure 7; Contemporary Sub-District in the Pedestrian Zone

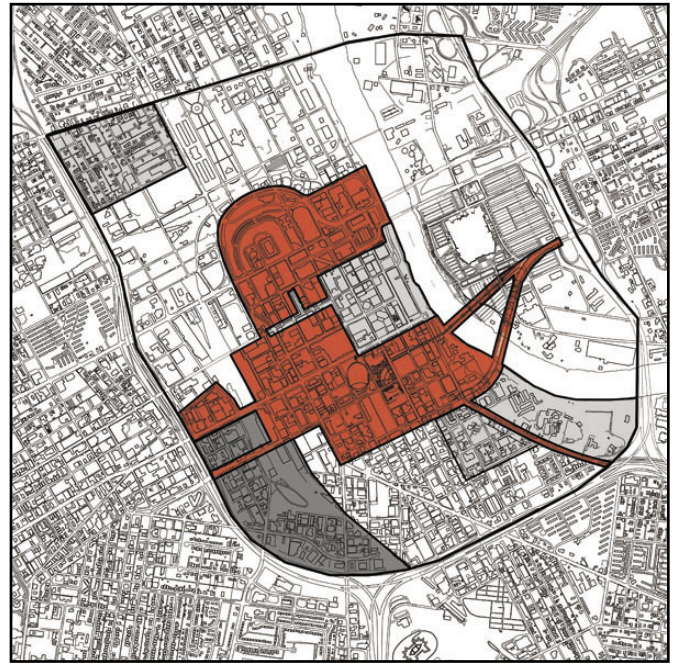


Figure 8; Core Sub-District in the Pedestrian Zone

materials may be encountered throughout the Core Sub-District, as well as scattered historical structures.

Also included in the Core is the proposed SoBro (South of Broadway) development area. While the majority of SoBro development is not anticipated in the immediate future, the Gateway Boulevard construction project could accelerate pedestrian-friendly development. This area is ripe for development and may require further analysis as implementation begins to refine its sub-district characteristics. See figure 8 for boundaries. The boundaries of the pedestrian intensive sub-districts are not static. As development continues and improved pedestrian-friendly environments emerge, these boundaries must be revised to fit the development pattern of the city.

The final contextual category, the remaining balance of Subarea 9, is classified as **Perimeter**. It has yet to reach its full potential as a pedestrian-rich environment and is not foreseen in the near planning horizon to require significant change to its lighting and furnishings. Though points of activity can be found therein, current lighting policy will remain focused on vehicular lighting standards serviced by overhead power lines to comparatively inexpensive fixtures. Pedestrian-scaled resources will be primarily distributed in limited quantities within the balance of Subarea 9, until a higher level of pedestrian uses are identified.

2.2.2 sidewalks and crosswalks

Pavement is an important and unifying element in any streetscape design. The use of paving materials and patterns can guide movement, define space, and provide a variety of design experience. The inventory of pavements used in the Subarea 9 context led the Steering Committee toward a different approach for the sidewalk and crosswalk components of the Design Guideline.

Due to several factors, Metro Public Works (MPW) had begun a re-evaluation of paving material choices for all of Metro Davidson County; not least among these factors was and is accessibility-related. Building and maintaining sidewalks and crosswalks that are compliant with the Americans with Disabilities Act Accessibilities Guidelines (ADAAG) is a fundamental Metro goal. Secondly, MPW must encourage the implementation of sidewalk and crosswalk materials in the public R.O.W. that are relatively easy and cost effective to maintain over the life cycle of the material.

The members of the Steering Committee shared MPW's concerns. Also shared among the Committee was a strong desire to strike a balance, throughout Subarea 9, between simple material uniformity and design monotony. While efficiency and safety are key goals, design monotony was no one's intention. For this reason, a review of the built environment for contextual diversity was conducted once again.

This review recognized the implications upon future installation budgets and operations costs over time of establishing/maintaining select areas of the downtown with enriched sidewalk and crosswalk materials. Careful consideration was given to analyzing existing conditions and improvements proposed in planning documents for downtown Nashville.

SIDEWALK AND CROSSWALK ZONES DEFINED

Three sidewalk and crosswalk paving zones emerged from the analysis. **Zones A, B, and C** now define the materials applications for distinct areas in the Design Guidelines.

Zone A coincides with one of the oldest parts of the city and falls within a portion of what is recognizable as the Historic District. Many of the sidewalks in the area are all brick or brick paver embellished. Zone A is delineated in figure 9 and includes 1st and 2nd Avenues North from Demonbreun Street to south boundary of Union Street R.O.W and the blocks between 1st and 2nd Avenues, Broadway and Shelby Street Extension from 1st to 5th Avenues South.

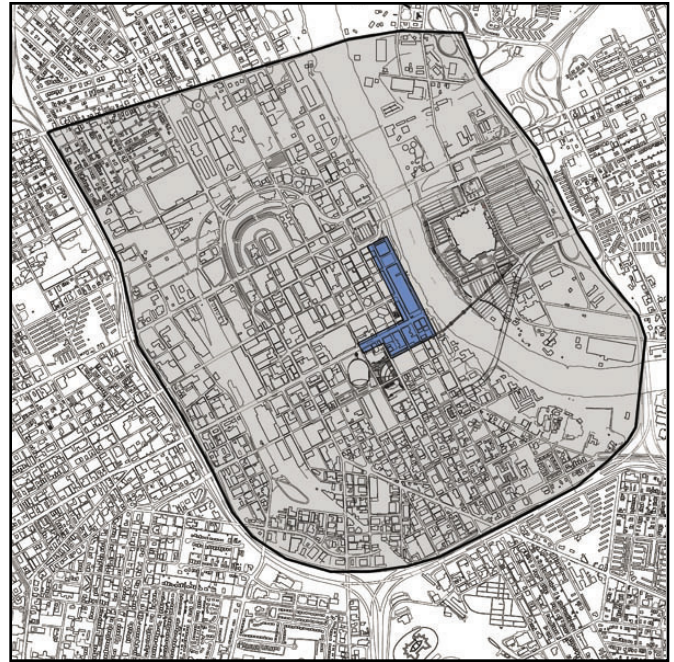


Figure 9; Zone A / Historic

Zone B designates specific corridors in the downtown with a special focus on paving materials. They are denoted as “Celebrated Corridors” within this document.



Figure 10; Zone B / Celebrated Corridor

There are five Celebrated Corridors recognized by the Design Guidelines. These corridors are either deemed

significant because of existing or planned civic contributions to the Public Realm. Zone B includes the rights-of-way of Deaderick Street, 5th Avenue of the Arts (from Gateway Boulevard to Charlotte Avenue), Gateway Boulevard (from Interstate Drive to 8th Avenue), 11th and 12th Streets within the Gulch. Zone B is indicated in figure 10 on the previous page.

Zone C is used to classify the balance of downtown Nashville's sidewalk zones, (areas not otherwise denoted as Zones A or B). The selection of sidewalk and crosswalk materials in Zone C provides MPW with the much-needed degree of uniformity and maintainability, while offering some opportunity for design expression to combat total monotony.

A further discussion of the Guidelines implications of Sidewalk and Crosswalk Zones A, B, and C can be found in Chapter 3.3 Paving including approved materials and applications.

2.3 goals and objectives

The Design Guidelines provide Metro agencies and departments with a means to insure that future Subarea 9 public R.O.W. improvements are developed consistently with the Streetscape Elements Design Guidelines. Though the guidelines do not apply to private property, site design decisions affecting private property are encouraged to respect the materials regulated in the adjoining rights-of-way. This is especially important where buildings are set back from the property line.

While the implementation of the guidelines will to visually distinguish various contextual Sub-Districts within Subarea 9, it will also create a more manageable approach to R.O.W. life cycle maintenance for Metro Public Works and NES.

The following goals and objectives developed to guide the initial phase this process are included below:

GOAL 1: Standardize Downtown streetscape lighting and furnishings to create a more pleasing and manageable streetscape environment

OBJECTIVES:

- ✓ Review accepted standards and make recommendations.
- ✓ Develop a recommended pallet of fixture types and furnishings that are contextually appropriate
- ✓ Establish a guideline recommendation for placement of fixture and furnishings that satisfy Metro ordinances and restrictions

GOAL 2: Standardize Downtown sidewalk and crosswalk paving materials and finishes to create a more pleasing and manageable streetscape environment

OBJECTIVES:

- ✓ Develop a design guideline recommendation for safe, ADA compliant sidewalk materials and finishes within an allowed range of variability
- ✓ Develop guideline recommendations that are contextually appropriate with Downtown district designations
- ✓ Develop recommendations that are compatible with Metro codes, ordinances, and restrictions



Figure 11; Attractive Downtown Streetscape

GOAL 3: Establish appropriate Metro review process for proposed streetscape furnishings types, locations, and sidewalk / crosswalk materials and finishes

OBJECTIVES:

- ✓ Review and make recommendations for standardization of review process for lighting and furnishings
- ✓ Review and make recommendations for standardization of review process of sidewalk / crosswalk materials and finishes

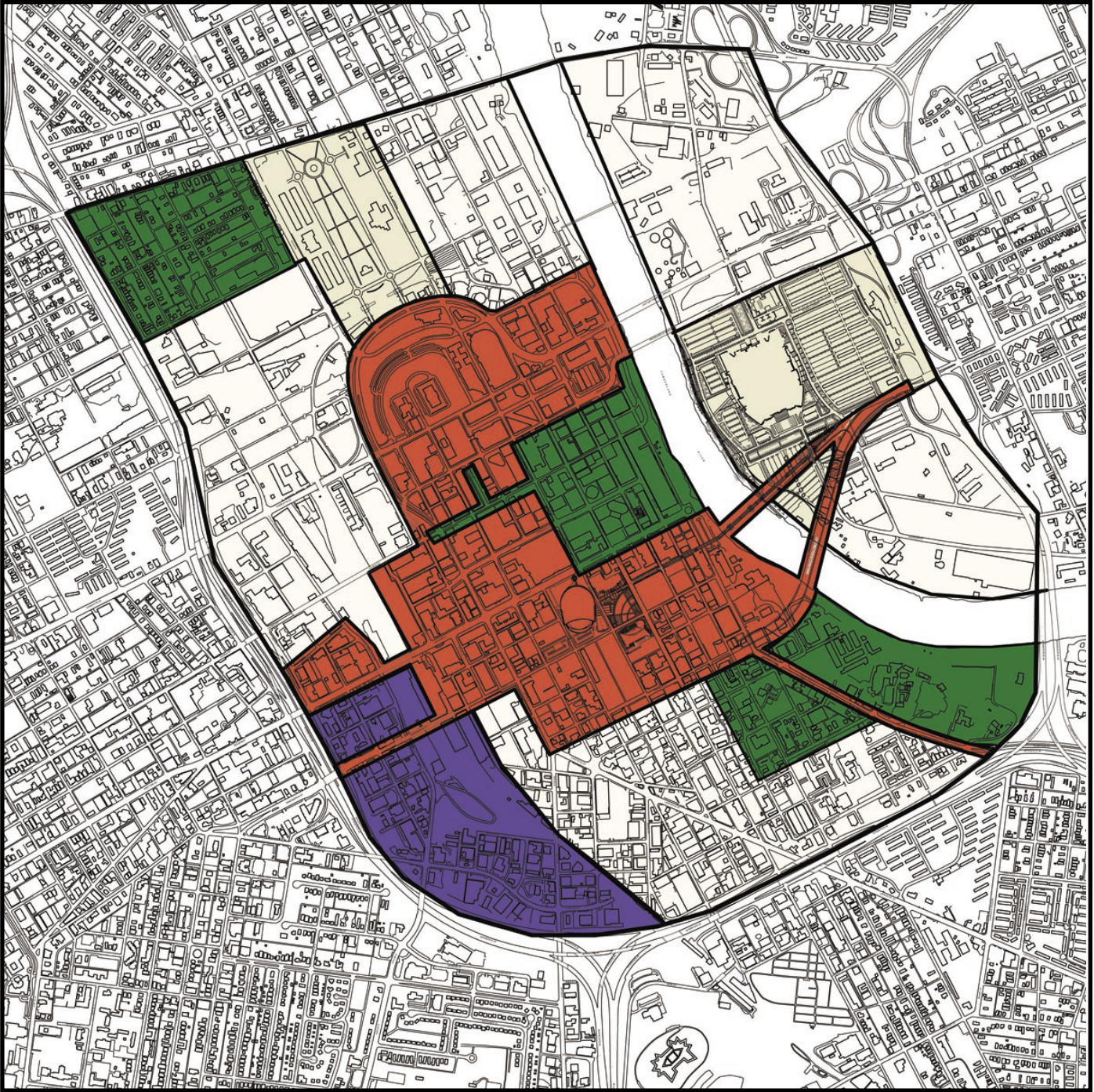
2.4 consensus building

The design team evaluated numerous current product catalogs for potential streetlighting and site furnishings for consideration by the Steering Committee. Each item was put through the same evaluated process; assessing material quality, durability, style, availability, conformance to existing Metro or NES standards, applicability to the urban contextual of the defined sub-districts.

Options for streetlight fixtures, benches, trash receptacles, bike racks, bollards, pavement materials and configurations were brought to the Steering Committee as preliminary recommendations for discussion. Over the course of several months and numerous meetings, a select number of the potential elements were short-listed for further consideration. Further discussion by the Steering Committee resulted in consensus over two potential streetlight fixtures per contextual sub-district. The remaining streetlighting selections were then more thoroughly evaluated by NES on their established criteria, photometrics, practicality and affordability. Through this process, the selection was narrowed to one streetlight fixture for each sub-district. Furnishings were debated and selected by consensus by the Steering Committee to complement the appropriate style and materials of the final streetlight candidates.

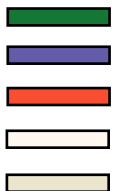
The selection process for other elements included in the Streetscape Elements Design Guidelines was conducted with a similar process, through Steering Committee review and consensus building. The draft recommendations were presented for review to the public for comment in 2003.

sub-district map (for use with streetscape elements exclusive of pavement)



legend

traditional sub-district
contemporary sub-district
core sub-district
perimeter sub-district
large developed areas



3.0 design guidelines

The following pages cover detailed streetscape elements information that are categorized into similar groupings. This information may be used to select the appropriate streetlight, traffic control structure, site furnishings, and pavement for use within a specific area of Subarea 9's public rights of way, divided into Traditional, Contemporary, and Core Sub-Districts. A few of the elements signified by (*) below will be addressed within a subsequent edition of the guidelines. For those elements, reference the noted agency for guidance.

DESIGN GUIDELINE COMPONENTS:

- 3.1 streetlighting
 - 3.1.1 streetlights
 - 3.1.2 traffic signals
- 3.2 streetscape furnishings
 - 3.2.1 benches
 - 3.2.2 trash receptacles
 - 3.2.3 bike racks
 - 3.2.4 bollards
 - 3.2.5 tree grates * (MPW)
- 3.3 paving
 - 3.3.1 sidewalks
 - 3.3.2 crosswalks
 - 3.3.3 accessible ramps * (MPW)
 - 3.3.4 pedestrian bulbs * (MPW)
- 3.4 public art * (Metro Arts Commission)
- 3.5 planting * (Metro Parks)
 - 3.5.1 street trees *
 - 3.5.2 under plantings *
- 3.6 signage * (MPW)
 - 3.6.1 directional *
 - 3.6.2 wayfinding *
 - 3.6.3 banners *
 - 3.6.4 kiosks *
- 3.7 transit shelters * (MTA)

To utilize this information, review the following steps:

1. Determine if the proposed improvements are within Subarea 9. *If yes, proceed to step 2.*
2. Locate the project's approximate location according to the preceding map of Subarea 9. *For all elements, not including pavements, proceed to step 3. For paving material guidelines, proceed to step 5.*
3. Determine the Contextual Sub-District boundary that the project is in; Traditional, Contemporary, Core, or Perimeter. (page 18 Sub-District map)
4. Determine the specified streetscape elements respective of their Sub-District classification.
5. For paving, determine the pavement zone that applies to the project area (page 84 Pavement Zone map).

6. Determine the appropriate paving materials per pavement zone.
7. Incorporate the appropriate recommendations into the streetscape plans.

3.1 streetlighting

3.1.1 streetlights

Streetscapes are integral to the neighborhoods and business districts through which they traverse. Well conceived urban streetscape corridors can be the most commonly experienced civic spaces with which our citizens are exposed. The streetscape environment must enhance, complement the character, and strengthen the identity of urban districts. Within these districts or zones, all of the site elements: streetlights, traffic poles and mast arms, benches, trash receptacles, bollards, etc., should offer the unifying vocabulary for creating a cohesive and legible landscape.

PEDESTRIAN-SCALED LIGHTING

A strong influence in this unifying urban vocabulary, both day and night, is the streetlight. Effective streetlighting, particularly pedestrian-scale lighting, is one streetscape element that helps users to feel safe and comfortable. By contributing a sense of safety, citizens are more apt to leave their cars and explore the downtown on foot. Lighting of sidewalks, pedestrian crossings, and streetlighting adds to the perception of safety. Streetlighting shall provide uniform lighting along the full width of the public right-of-way. In places where pedestrian activity is important and encouraged, streetlighting poles shall be spaced with consideration given the pedestrian-scaled environment.

LIGHTING CLASSIFICATIONS

As Nashville continues to grow and increase in density, our nation's cities also continue to expand as well. With continued development, more and more lighting is required and energy demands increase. Many of our larger cities are now clearly visible from outer space due to large amounts of wasted and reflected urban-generated light.

Numerous studies have raised concerns for public health. Studies have linked increased light at night to a decrease in the body's natural ability to create melatonin, a natural chemical, that may reduce the risk of cancer. Other studies have found a potential link to the earlier onset of puberty in pre-teens.

The Illuminating Engineering Society of North America (IESNA) is working to quantify the use of exterior lighting in relationship to the surrounding areas and its uses. For example, a densely populated urban core such as downtown Nashville would require different lighting needs than a naturalized area such as Warner

Park. IESNA is currently working on an initiative called "ETAL" or Evaluation of Task Adaptation Luminaire to quantify this very issue. Lighting Zone classifications are being developed that will further be defined by applicable lighting levels for those zones. To work in concert with ETAL, to decrease light pollution levels and decrease energy demands, IESNA has created four classifications that categorizes the distribution patterns of light from luminaires. These classifications attempt to define the amount of stray light that can be emitted from a luminaire at high angles. The intent of these classifications, or levels of "Cutoff", is to eliminate or greatly minimize the amount of uplight, reflected light from pavement, light trespass, and glare in the urban context.

The classifications are as follows:

- ✓ Full Cutoff- No light above the 90° and only 10% lamp lumens above 80°
- ✓ Cutoff- No more than 2.5% of lamp lumens above 90° and only 10% lamp lumens above 80°
- ✓ Semi Cutoff- No more than 5% of lamp lumens above 90° and only 20% lamp lumens above 80°
- ✓ Non Cutoff- Limit on light distribution at any angle

Within the urban context a balance must be struck between lighting efficiency and ambient conditions. An effort shall be made to work with lighting manufacturers to ensure that all new streetlighting in downtown shall eventually comply with the minimum requirements of semi-cutoff lighting. This shall be accommodated by the use of caps integrated into the housing unit or through the use of lunar optics.

BANNER-RATED POLES

Banners attached to streetlight poles are very useful in contributing to a sense of identity for an area as well as providing special event information. Banners help to unify elements within a streetscape corridor and / or sub-district. All streetlight poles shall be specified to carry double banners, regardless of whether or not banners are intended in the immediate future. Where poles are not immediately designated to receive banners, the poles shall be fitted with threaded plugs. These may be easily removed and banner arms installed when the need arises. NES requires that one banner arm, preferably a breakaway arm, is provided for the top of the banner and the lower portion of the banner secured with an eyebolt and zip tie. Streetlight poles must be rated for wind loads based on a banner size of 63" long and 20" wide. The banners must comply with Metro's Banner Resource Guide that may be found in Chapter 2.62.050 of the Metro Code. The Special Events Coordinator for the Mayor's Office currently programs

the use, installation, and rotation schedule for all banners. The banner application and the Resource Guide may be obtained at the Mayor's Office of Economic and Community Development on Union Street. In sub-districts where light poles cannot accommodate banners, separate banner poles may be incorporated into the streetscape. These poles should be of the same aesthetic character and quality as the surrounding streetlight poles. All streetlight and banner poles shall be located within the "furnishing zone" which is further defined under "street furnishings".

The spacing of these supplemental poles should work in concert with the streetlights and enforce the repetition of form.

STREETLIGHTING SUB-DISTRICTS

The Traditional, Contemporary, Core, and Perimeter classifications defined earlier (see Section 2.2.1) provide a framework in which to place streetlights to complement a particular downtown context. Scale, style, lighting effect, cost, and maintenance considerations affected fixture selection. Each of the fixtures was chosen for its ability to complement the surrounding architecture and the selected site furnishings.

Pages 27 through 33 establish guidelines for fixture and pole selections though do not set fixture spacing. Pole height, lamp type, road width, and overall perception of lighting shall dictate the precise placement of the fixture. The spacing of the streetlights is not only dependent on fixture photometrics, but also the desired aesthetic effect created by the repetition of form and ambient light. The establishment of appropriate scale and rhythm must work in conjunction with street trees and other vertical elements. For example, while pole spacing of 75' on center might be desirable for a street width of 48'-0", it would not be adequate for a road width of 84'-0". All streetlight spacing shall be analyzed by an electrical engineer and submitted to Nashville Electric Service (NES) for review and approval.

TRADITIONAL SUB-DISTRICT

TRADITIONAL SUB-DISTRICT: The Washington fixture, as manufactured by Holophane, is a traditional large scale acorn-style fixture and shall replace the existing Granville fixture, a small scale acorn style fixture. It's improved photometrics and scale make it suitable for use throughout the Traditional zone. The current 16'-0" tall pole will continue to be utilized throughout the Traditional zone. In areas where this fixture replaces the existing 150W Granville, the wattage may be increased or reduced as each site condition warrants. The current 75' on-center spacing of the existing poles

accommodate a 150W lamp. Refer to page 27 for further information.

An alternate option for approved portions of the Traditional Sub-District may be the Prismasphere or "globe" fixture as manufactured by Holophane. This fixture's shape recalls one of Nashville's historic streetlights. Due to the historic scale of this globe fixture and pole, it must utilize a 12'-0" tall as described on page 29. The limiting height of this pole precludes the use of banners. The guidelines encourage the use of the globe fixture and shorter poles at civic buildings, in selected residential areas of the Traditional Sub-district, or on private property.

This "Alternative" globe streetlight may only be used with the approval of the Design Guidelines review committee and can only occur along the following corridors:

- ✓ Church Street (Traditional Sub-District)
- ✓ Capitol Boulevard Traditional Sub-District)
- ✓ 1st Avenue (Traditional Sub-District)
- ✓ 2nd Avenue (Traditional Sub-District)

Four criteria must be met in order to place the "Alternative" streetlights.

- ✓ Must be location specific
- ✓ Special treatment is warranted
- ✓ Must be technically appropriate; i.e. proper photometrics and lumens, conducive to pedestrian use, etc.
- ✓ Must be consistent with style of existing or proposed streetlights

CONTEMPORARY SUB-DISTRICT

CONTEMPORARY SUB-DISTRICT: The fixture chosen for the Contemporary Sub-district reflects a modern style that will complement the mix innovative infill and new architecture throughout the Sub-District. The light fixture, Viper-R by USArchitectural Lighting, sits atop a silver pole by USArchitectural Lighting as described further on page 31.

CORE SUB-DISTRICT

CORE SUB-DISTRICT: The Tear Drop series fixture by Holophane was selected for use in the Core Sub-District. This fixture has design characteristic that complement the diverse design scales and styles in the Core. The scale of the proposed mounting height will easily blend with the surrounding monumental architecture. The pole shall be a black pole with a curved arm by Valmont.

PERIMETER SUB-DISTRICT

PERIMETER SUB-DISTRICT: No new fixture selection for the Perimeter Sub-district is presented in the Design Guidelines. Existing fixtures will continue to be maintained to provide lighting for vehicular travel until development intensity warrants re-evaluation. The lighting needs in this Sub-District are generally met with low cost Cobra-style fixtures mounted on a variety of pole types.

As streetlight planning advances with the ongoing development of new lighting technologies, the Design Guidelines are intended to be reviewed and updated in order to utilize future technologies.

The following profiles on pages 27 through 33 summarize the Design Guideline requirements for streetlight fixtures for the Traditional, Contemporary, and Core Sub-Districts.

“OR EQUAL” PRODUCT SUBMITTALS

The Design Guideline Review Committee shall review all fixture and pole types and will consider products that are submitted as “or equal” to the recommended products.

Streetlighting Guidelines:

- All fixtures shall meet all Illuminating Engineers Society (IES) standards.
- All fixtures shall be approved by Nashville Electric Service (NES)
- All fixtures shall have a 120V receptacle located at the top of the pole.
- Streetlights shall be located within the Furnishing Zone.
- Lights shall be placed approximately at the front third or back third of a parking space. This should minimize damage from a vehicle door.
- Lights shall be placed at least five feet (5'-0") away from a driveway ramp, curb cut, or alley access.
- Lighting spacing shall be determined by an electrical engineer.
- Avoid placing lights directly in front of residences to avoid disturbing the individuals.
- Fixtures and poles identified herein shall be used in designated Sub-Districts. Materials that are “equal” in appearance and performance characteristics may be considered for approval by the Design Guideline Review Committee.

3.1.1 streetlights



STREETLIGHT: TRADITIONAL

PRODUCT: *As listed below or approved equal*

LUMINAIRE: *HOLOPHANE*

- 'Washington' with Lunar Optics
- Glass Lens
- Tool-less entry
- HPS lamp - Color Corrected
- Wattage to be determined by Lighting Engineer

ACCESSORIES:

- Ribs, Bands, Medallion, Finial

POLE: *HADCO*

- SP-5442-F (banner rated)
- Base: Clam Shell

BANNER ARMS: *HADCO*

- *Integral Arms: SA5493-F*
- *Clamped On Arms: 2BA2A24BA*
- *Eyebolt*

MATERIAL: Cast Aluminum

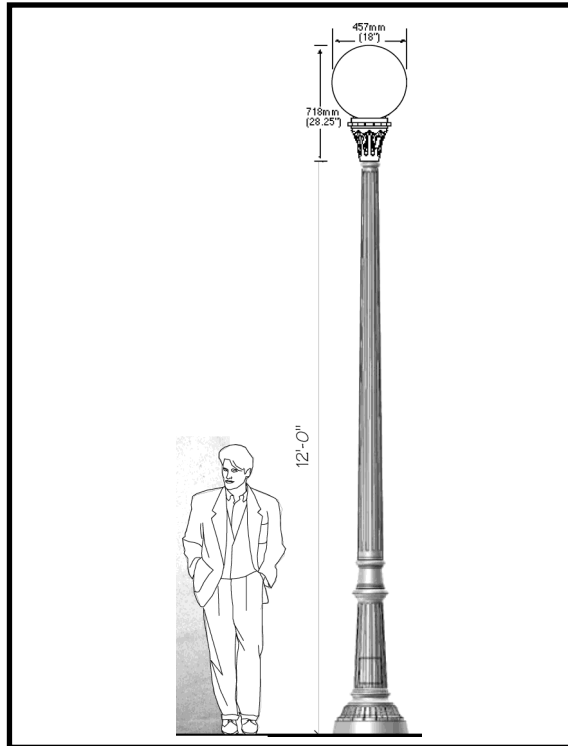
FINISH: Black Powdercoat

ADDITIONAL: 120V GFI receptacle located at top



traditional sub-district

3.1.1 streetlights



“ALTERNATIVE” STREETLIGHT: TRADITIONAL

PRODUCT: *As listed below or approved equal*

LUMINAIRE: *HOLOPHANE*

- ‘Prismasphere’ - GSU
- Glass Lens
- Tool-less entry
- HPS lamp - Color Corrected or MH lamp as determined by the Design Review Guidelines Committee (DRGC)
- Wattage to be determined by Lighting Engineer

POLE: *HADCO*

- P-2555 (12’-0”)
- GFI receptacle located at top

MATERIAL: Cast Aluminum

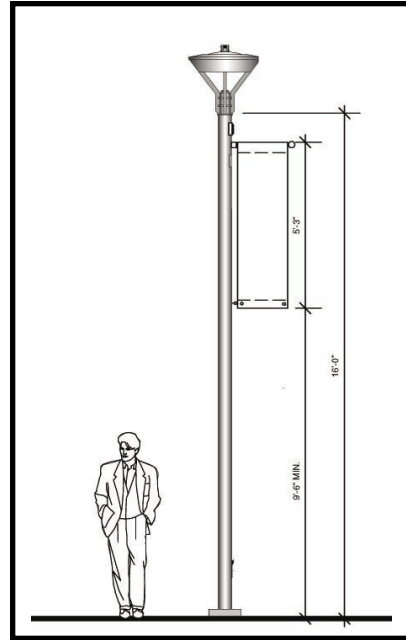
FINISH: Black Powdercoat

ADDITIONAL: 120V GFI receptacle located at top



traditional sub-district

3.1.1 streetlights



STREETLIGHT: CONTEMPORARY

PRODUCT: *As listed below or approved equal*

LUMINAIRE: *USArchitectural*

- 'Viper-R'
- Glass Lens
- Tool-less entry
- MH lamp
- Wattage to be determined by Lighting Engineer

POLE: *USArchitectural*

- RNTA-5" (banner rated)
- Base: Round Base Cover
- GFI receptacle located at top

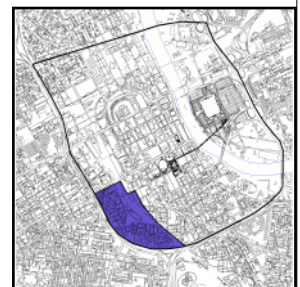
BANNER ARMS: *USArchitectural*

- Break Away Arms: *BBA*
- Fixed Banner Arms: *FBA*
- Banner Eye Bolt: *BEB*

MATERIAL: Cast Aluminum

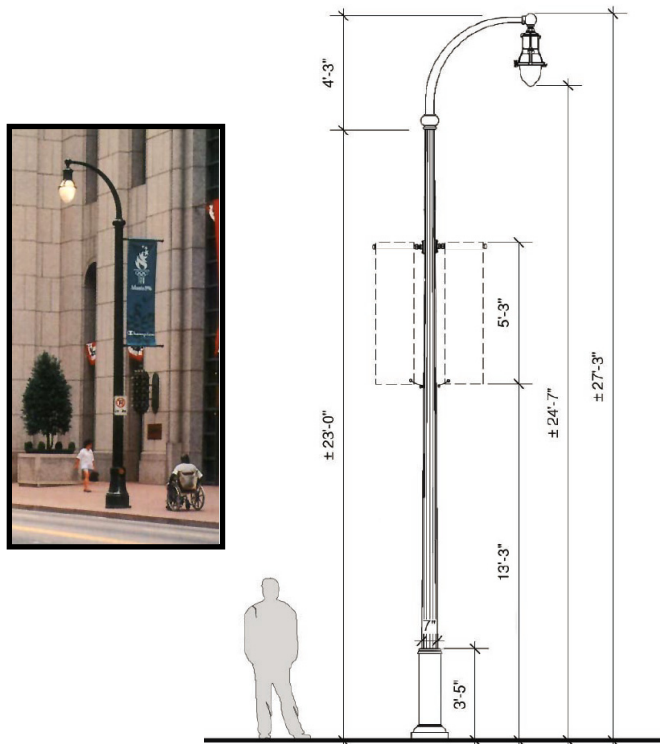
FINISH: Silver Powdercoat

ADDITIONAL: 120V GFI receptacle located at top



contemporary sub-district

3.1.1 streetlights



STREETLIGHT: CORE

PRODUCT: *As listed below or approved equal*

LUMINAIRE: *HOLOPHANE*

- 'Crystallite' Tear Drop
- Glass Lens
- Tool-less entry
- HPS lamp - Color Corrected
- Wattage to be determined by Lighting Engineer

POLE: *VALMONT #DB00657*

- 16 Flute (banner rated)
- Arm: Holophane
- Base: Renaissance
- GFI receptacle located at top

BANNER ARMS: *VALMONT*

- Fixed Banner Arm (Upper): FBA
- Banner Eyebolt: BEB

MATERIAL: Cast Steel

FINISH: Black Powdercoat

ADDITIONAL: 120V GFI receptacle located at top



core sub-district

3.1.2 traffic signals and pedestrian crossing signals

Each fixture was chosen for its compatibility with the recommended streetlights.

The following information summarizes the recommended traffic signals for the Traditional, Contemporary, and Core sub-districts.

Traffic Signal Guidelines:

- *All fixtures shall be placed to permit the required clear path of travel*
- *The push button signals for pedestrian signals shall be located within 24 inches of the top landing*
- *Where a traffic signal pole is not needed, incorporate a pedestrian crossing signal and pole as determined by Metro Public Works.*
- *Wayfinding signage should occur in conjunction with these vertical elements and in a way to minimize visual clutter.*
- *Only in special conditions will the traffic signals be allowed to coincide with the traffic signal pole and without a mast arm. These conditions must be reviewed and approved by the Design Guideline Review Committee.*
- *Fixtures and poles identified herein shall be used in designated Sub-Districts. Materials that are “equal” in appearance and performance characteristics may be considered for approval by the Design Guideline Review Committee.*

3.1.2 traffic control structures



TRAFFIC POLE / MAST ARM: TRADITIONAL

PRODUCT: *As listed below or approved equal*

LUMINAIRE: *HOLOPHANE*

- 'Washington' with Lunar Optics
- Luminaire Support Arm: Hadco M-302-4

MAST ARMS & POLE: *VISCO*

- VI-B10/27-TS-STR/17'-3"-1MA; (Single Mast Arm-size varies)
- VI-B10/27-TS-STR/17'-3"-2MA; (Double Mast Arm-size varies)

MATERIAL: Cast Steel

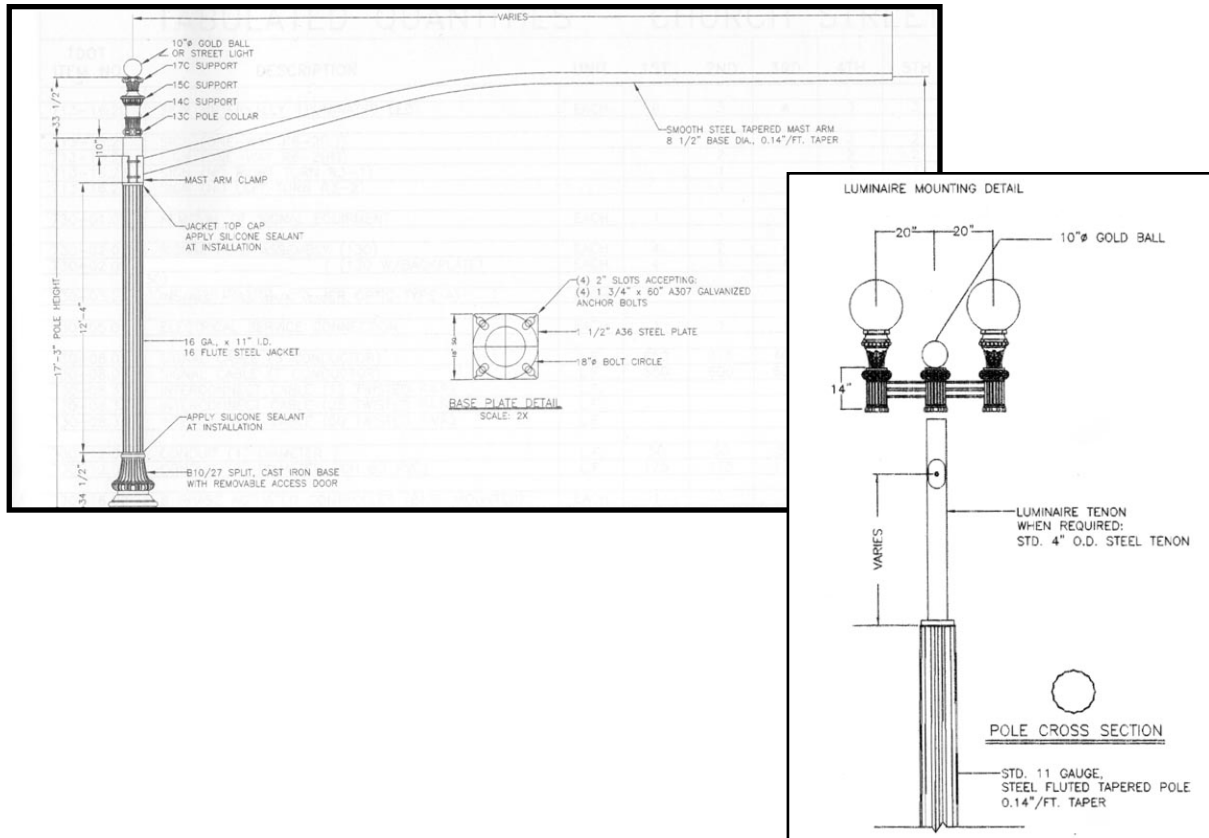
FINISH: Black Powdercoat

ADDITIONAL: 120V GFI receptacle located at top



traditional sub-district

3.1.2 traffic control structures



“ALTERNATIVE” TRAFFIC POLE / MAST ARM:

TRADITIONAL

PRODUCT: *As listed below or approved equal*

LUMINAIRE: *HOLOPHANE*

- Prismsphere - GSU
- Luminaire Support Arm: Visco: W2 Twin Arm Assembly

MAST ARMS & POLE: *VISCO*

- VI-B10/27-TS-F/17'-3"-1MA; (Single Mast Arm-size varies)
- VI-B10/27-TS-F/17'-3"-2MA; (Double Mast Arm-size varies)

MATERIAL: Cast Steel

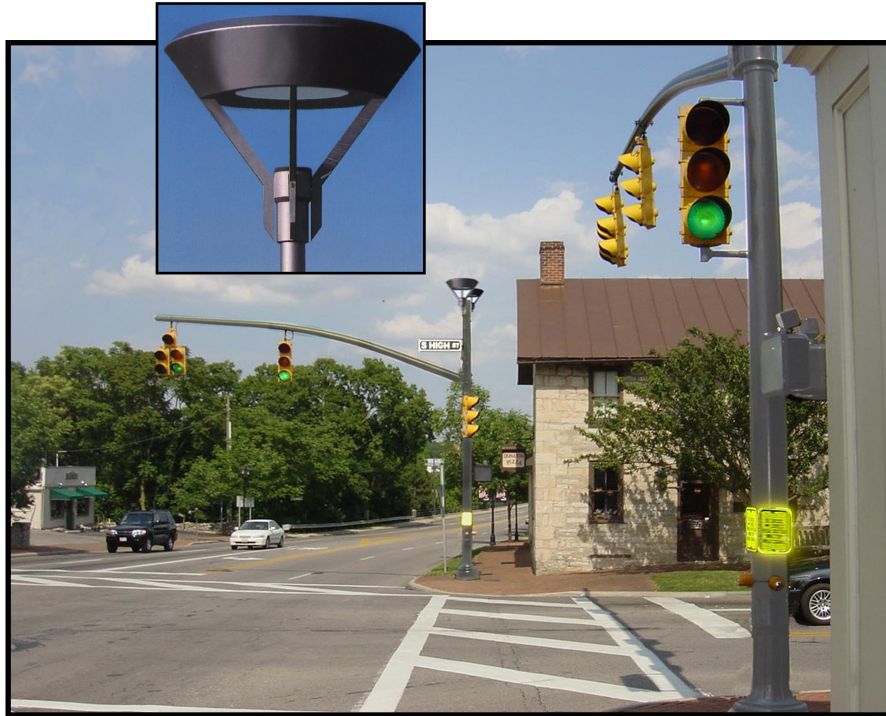
FINISH: Black Powdercoat

ADDITIONAL: 120V GFI receptacle located at top



traditional sub-district

3.1.2 traffic control structures



TRAFFIC POLE / MAST ARM: *CONTEMPORARY*

PRODUCT: *As listed below or approved equal*

LUMINAIRE: *USArchitectural*

- Viper-R
- Luminaire Support Arm

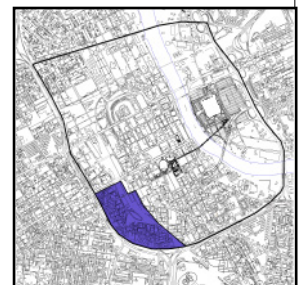
MAST ARMS & POLE: *VALMONT*

- Round, Smooth
- Mast Arm: Round, Straight
- Base: Low

MATERIAL: Cast Steel

FINISH: Silver Powdercoat

ADDITIONAL: 120V GFI receptacle located at top



contemporary sub-district

3.1.2 traffic control structures



TRAFFIC POLE / MAST ARM: CORE

PRODUCT: *As listed below or approved equal*

LUMINAIRE: *HOLOPHANE*

- 'Washington' with Lunar Optics
- Luminaire Support Arm: Hadco M-302-4

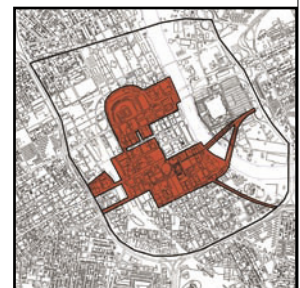
MAST ARMS & POLE: *VALMONT*

- 16 Flute Pole, Straight
- Mast Arm: Smooth, Straight
- Base: Renaissance

MATERIAL: Cast Steel

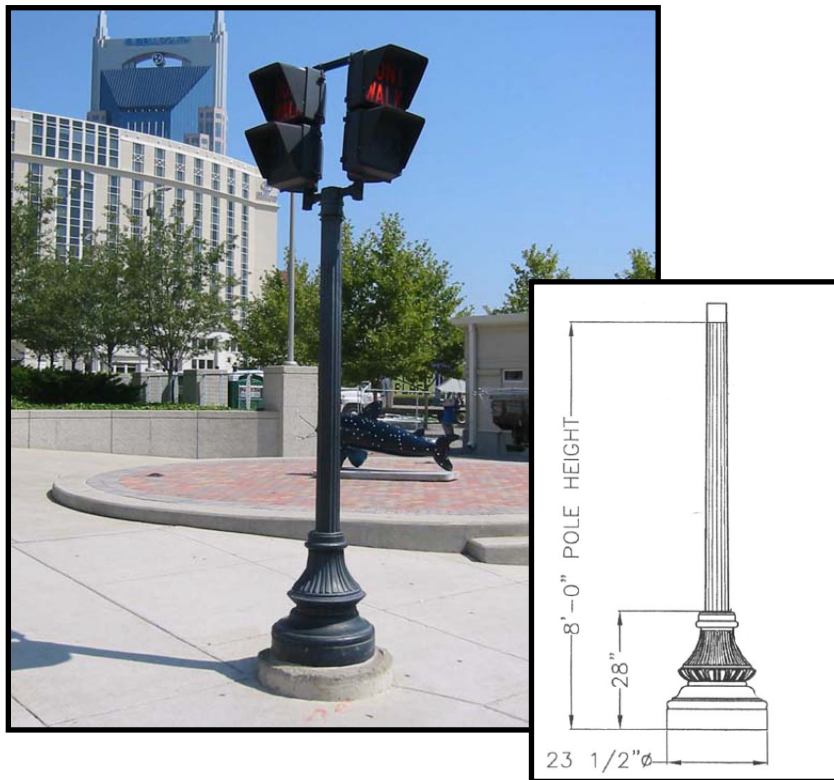
FINISH: Black Powdercoat

ADDITIONAL: 120V GFI receptacle located at top



core sub-district

3.1.2 traffic control structures



PEDESTRIAN SIGNAL POLES: *TRADITIONAL and "ALTERNATE" TRADITIONAL*

PRODUCT: *As listed below or approved equal*

- VI-B-F/8'-PED
- Base: Clam Shell
- Refer to Metro Public Work standards for Crosswalk Signals

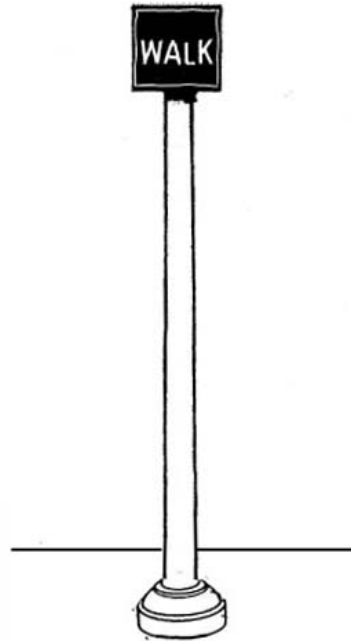
MATERIAL: Cast Steel

FINISH: Black Powdercoat



traditional sub-district

3.1.2 traffic control structures



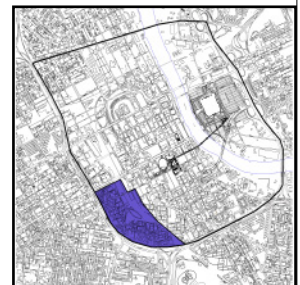
PEDESTRIAN SIGNAL POLES: CONTEMPORARY

PRODUCT: *As listed below or approved equal*

- 8' Smooth Round Pole with Low Base
- Refer to Metro Public Work standards for Crosswalk Signals

MATERIAL: Cast Steel

FINISH: Silver Powdercoat



contemporary sub-district

3.1.2 traffic control structures



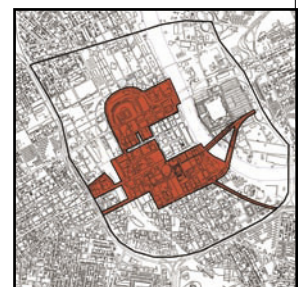
PEDESTRIAN SIGNAL POLES: CORE

PRODUCT: *As listed below or approved equal*

- 8' Fluted Pole with Renaissance Base
- Refer to Metro Public Work standards for Crosswalk Signals

MATERIAL: Cast Steel

FINISH: Black Powdercoat



core sub-district

3.2 street furnishings

Street furnishings such as seating, trash receptacles, bike racks, and bollards are important elements within the streetscape. These elements not only serve a specific function but also help to visually unify specific districts or neighborhoods by creating a “vocabulary” of complementary furnishing styles. Defining a unified furnishings vocabulary within each of downtown’s contextual Sub-Districts serves to reinforce a baseline for the quality of the user-friendly environment. Section 3.2 of the Design Guideline identifies the furnishings groups and approved individual elements by Sub-District.

Placement of furnishings can help to direct traffic flow and define places for rest and gathering. But, space must first be available for furnishings to be safely added within the public realm. Many street corridors in Nashville’s downtown are relatively narrow. Sidewalk widths, depending on individual streets, may or may not accommodate streetscape furnishings while maintaining safe widths for pedestrian travel.

In Metro Davidson County, each roadway corridor falls under a specific classification system as defined in the adopted *Nashville – Davidson County Strategic Plan for Sidewalks and Bikeways* (Sidewalk and Bikeway Plan). This document can be found in its entirety at the Metropolitan Nashville Department of Public Works website:

www.nashville.gov and
[http://pw.nashville.gov/WEBPROD/Sidewalk Main.asp](http://pw.nashville.gov/WEBPROD/Sidewalk%20Main.asp).

Therein, roadways are classified as one of the following:

- ✓ Local and Minor Collector Streets – local traffic only
- ✓ Major Collectors and Arterials – moderate to high-speed motorist traffic
- ✓ Major Collectors and Arterials in Core and Center Transects; Commercial Corridors, and Centers in Neighborhood Transects

SIDEWALK ZONES: Required sidewalk cross sections are determined based on the various roadway classifications. Currently, the Sidewalk and Bikeway Plan recommends that the sidewalk corridor be envisioned as three distinct zones: the *Furnishings Zone*, the *Pedestrian Travelway*, and the *Frontage Zone*.

The *Furnishing Zone* provides a buffer between the vehicular traffic and the pedestrian. This zone increases in width as speed limits increase or with larger traffic volumes. It accommodates all site furnishing elements, utility poles, streetlight poles, trees, etc.

The *Pedestrian Travelway* provides an unobstructed corridor for pedestrian movement along the sidewalk.

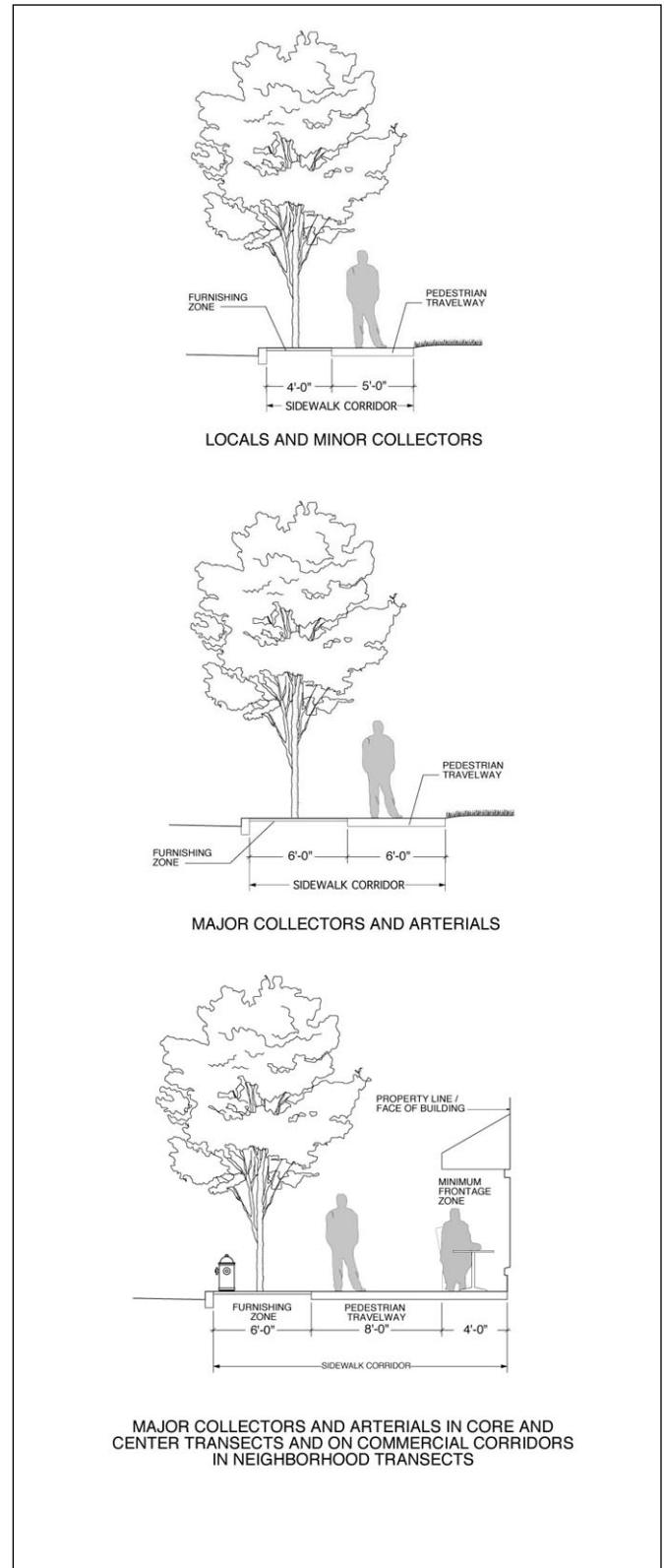


Figure 12; Major Collectors and Arterials in Downtown Core (from Metro Davidson County Strategic Plan for Sidewalks and Bikeways)

As mandated by ADA, this corridor must be at

least 5'-0" wide.

The **Frontage Zone** is an area that falls between the pedestrian travelway and the face of the buildings fronting the R.O.W. The zone, when available, is to provide space for café seating, product displays, and window-shopping. The minimum width dimensions for each of these zones vary depending on the roadway classification.

LOCAL AND MINOR STREETS: The narrowest sidewalk corridor zone can be anticipated along the local and minor collectors. These sidewalk corridor cross sections are required to provide a minimum 4'-0" wide furnishing zone and a minimum 5'-0" pedestrian travel way as shown in figure 12. These lesser widths are permitted because of narrower roads and slower vehicular speeds. In areas where there is on-street parking, an optional 2'-0" wide buffer space may be provided between the face of curb and the furnishing zone in order to provide access around the furnishing elements. This corridor zone would not necessarily have a frontage zone.

MAJOR COLLECTORS AND ARTERIALS: The major collectors and arterials generally have moderate to high-speed vehicular traffic. This requires that the furnishing zone increase its buffering width to a recommended 6'-0". In addition, these zones generally have a lot of commercial activity that, in essence, means increased pedestrian activity. Therefore, it is recommended that the pedestrian travelway increase as well to 6'-0". This zone may not necessarily have a frontage zone. Refer to figure 11.

MAJOR COLLECTORS AND ARTERIALS IN THE CORE:

Finally, the major collectors and arterials found in the core travel through a diversity of mixed uses, various architectural contexts, and degrees of intensity of development. These sidewalks corridors are generally used for more than just walking. It is not uncommon that they become a part of the social fabric and a place to gather and people watch. Sidewalk cafes may be a part of the experience along these corridors. The recommended furnishing zone is a minimum of 6'-0", the pedestrian travelway a minimum of 8'-0", and a 4'-0" minimum for the frontage zone. Refer to figure 11.

Many of downtown's existing rights-of-way can not accommodate the required minimum widths nor do they yet have the necessary pedestrian activity to warrant the placement of benches, bike racks, bollards, etc. In many cases, however, trash receptacles can be incorporated where possible in order to help deter littering. Site furnishings shall be implemented where existing rights-of-way are wide enough, where existing

slopes do not exceed 2%, and where pedestrian volume is significant enough to justify the placement of the furnishings. The Traditional, Contemporary, and Core Sub-District classifications shall be utilized in selecting furnishings. The Areas included in the Perimeter classification may not have a need for site furnishings. As these areas are improved or redeveloped, they should then be reclassified into one of the other three Contextual Sub-Districts.

Currently, recommendations do not address all components of a well designed streetscape. Elements such as public art, information kiosks, way finding signage, newspaper vending machines, bus shelters, street trees and plantings, tree grates, banner locations, or planters are to be included as the need arises. As a general rule, these components should match the character of the elements recommended within this document and should be located within the furnishing zone. Refer to page 21 for appropriate contacts for guidance on these elements.

Public art may be incorporated into streetscape elements and public spaces in accordance with the Public Art Guidelines established by the Metro Arts Commission and administered by the Public Art Committee.

The following information summarizes the selected site furnishings for the **Traditional**, **Contemporary**, and **Core** Sub-Districts.

Site Furnishing Guidelines:

- *All elements must be made of dependable and durable materials requiring minimal maintenance.*
- *All benches must meet ADA guidelines.*
- *All benches must have at least one intermediate arm to discourage sleeping.*
- *Furnishings should be permanently secured to the pavement via tamper resistant methods.*
- *All trash receptacles must utilize a durable plastic interior bin.*
- *Bicycle racks should be placed in areas that will not pose a danger to the pedestrian.*
- *Place racks near entrances or gathering places.*
- *Furnishings identified herein shall be used in designated Sub-Districts. Materials that are “equal” in appearance and performance characteristics may be considered for approval by the Design Guideline Review Committee.*

3.2.1 benches

Pedestrians in the public realm can be more comfortable with opportunities to rest, people watch, or have a bite of lunch. They may even spend more time in a downtown environment where seating is provided. Seating can come in many forms, such as seatwalls, chairs, and benches. The focus of seating in the Design Guidelines is benches – freestanding seating provided for public use in the Right-of-Way.

The following qualities are required of benches selected for use in downtown Nashville:

- ✓ part of a family of furnishings that are related in style, color and materials to other furnishings
- ✓ the specific family of furnishings is distinctive within a Contextual Sub-District as defined in the Design Guidelines (either Traditional, Contemporary, Core)
- ✓ of sound construction and made of materials/finishes that are durable and resistant to anticipated abuses in the public realm
- ✓ offer ease of maintenance and reduced life cycle cost benefits
- ✓ meet ADA Guidelines for accessibility
- ✓ provide at least one interim arm rest along the length of the bench to discourage prone posture
- ✓ must be secured via tamper resistant methods

The benches included herein were selected from a wide range of manufactured products. They are intended to be placed within specified areas of downtown, within the permitted furnishing zones of sidewalk corridors and in compliance with all other applicable codes and restrictions. Elements that are “equal” in appearance and performance characteristics may be considered for approval by the Design Guideline Review Committee.

3.2.1 benches



BENCH: TRADITIONAL

PRODUCT: *As listed below or approved equal*

- LANDSCAPE FORMS: *Plainwell*
- 72" Bench
- (1) Intermediate Arm (not shown in illustration)
- Surface Mount

MATERIAL: Cast Aluminum Seats and Back, Cast Steel Frame

FINISH: Black Powdercoat



traditional sub-district

3.2.1 benches



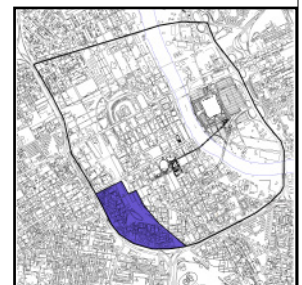
BENCH: CONTEMPORARY

PRODUCT: *As listed below or approved equal*

- LANDSCAPE FORMS: *Chase Park*
- 3 Seat Unit
- (2) Intermediate Arms (not shown in illustration)
- Embedded

MATERIAL: Cast Aluminum Seats and Back, Cast Steel Frame

FINISH: Silver Powdercoat



contemporary sub-district

3.2.1 benches



BENCH: CORE

PRODUCT: *As listed below or approved equal*

- LANDSCAPE FORMS: *Petosky*
- 78" Bench
- (1) Intermediate Arm (not shown in illustration)
- Embedded

MATERIAL: Cast Steel Rod Inserts and Frame

FINISH: Black Powdercoat



core sub-district

3.2.2 trash receptacles

The urban condition is by nature a generator of discardable items. Within the public realm, pedestrian workers, shoppers, residents, and visitors each generate solid waste in the form of trash. Papers, styrofoam cups, sandwich wrappers, and broken umbrellas must be discarded from day-to-day activities. Establishing a convenient means of depositing this waste in a way that can be just as conveniently collected for disposal is a difficult task, particularly within full view of the rest of a pleasing streetscape environment. Attractive containers must be strategically positioned into the furnishing zone of the sidewalk corridor for successful collection of what might otherwise become downtown *litter*.

The following qualities are required of trash receptacles selected for use in downtown Nashville:

- ✓ part of a family of furnishings that are related in style, color and materials to other furnishings
- ✓ the specific family of furnishings is distinctive within a Contextual Sub-District as defined in the Design Guidelines (either Traditional, Contemporary, Core)
- ✓ of sound construction and made of materials/finishes that are durable and resistant to anticipated abuses in the public realm
- ✓ offer ease of maintenance and reduced life cycle cost benefits
- ✓ placed for convenience for easy disposal and collection of small waste items
- ✓ must be secured via tamper resistant methods
- ✓ must utilize a durable plastic interior bin

The trash receptacles included herein were selected from a wide range of manufactured products. They are intended to be placed within specified areas of downtown, within the permitted furnishing zones of sidewalk corridors and in compliance with all other applicable codes and restrictions. Elements that are “equal” in appearance and performance characteristics may be considered for approval by the Design Guideline Review Committee.

3.2.2 trash receptacles



TRASH RECEPTACLE: TRADITIONAL

PRODUCT: *As listed below or approved equal necessary to achieve Metro Public Work's operational standards*

- LANDSCAPE FORMS: *Plainwell*
- Top Opening or Side Opening with Sand Pan
- Surface Mount

MATERIAL: Cast Aluminum

FINISH: Black Powdercoat



traditional sub-district

3.2.2 trash receptacles



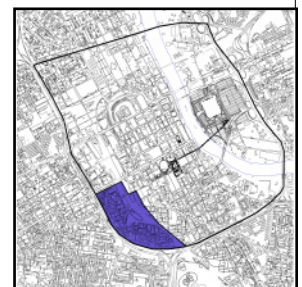
TRASH RECEPTACLE: CONTEMPORARY

PRODUCT: *As listed below or approved equal necessary to achieve Metro Public Work's operational standards*

- LANDSCAPE FORMS: *Chase Park*
- Top Opening or Side Opening with Sand Pan
- Surface Mount

MATERIAL: Cast Aluminum

FINISH: Silver Powdercoat



contemporary sub-district

3.2.2 trash receptacles



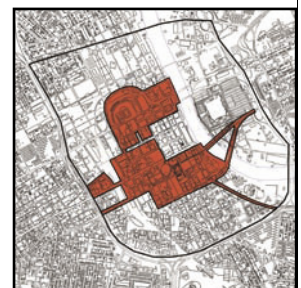
TRASH RECEPTACLE: CORE

PRODUCT: *As listed below or approved equal necessary to achieve Metro Public Work's operational standards*

- LANDSCAPE FORMS: *Petosky*
- Side Opening with or without Sand Pan
- Embedded

MATERIAL: Cast Steel

FINISH: Black Powdercoat



core sub-district

3.2.3 bike racks

Because the use of alternative modes of transportation is encouraged in Metro Nashville Davidson County, many bike routes are planned that will bring increasing numbers of bicyclists into downtown. Trips may be work related, recreational in nature, or local interblock transportation by residents of downtown. Regardless of the reasons the trips, the safe placement of bicycle storage facilities is becoming an increasing need. Permanently mounted bicycle racks provide convenient temporary means of parking bikes in a secured manner within the streetscape environment.

The following qualities are required of bike racks selected for use in downtown Nashville:

- ✓ part of a family of furnishings that are related in style, color and materials to other furnishings
- ✓ the specific family of furnishings is distinctive within a Contextual Sub-District as defined in the Design Guidelines (either Traditional, Contemporary, Core)
- ✓ of sound construction and made of materials/finishes that are durable and resistant to anticipated abuses in the public realm
- ✓ offer ease of maintenance and reduced life cycle cost benefits
- ✓ placed for convenience, particularly at large activity generators or attractors and end-of-trip facilities where bicycle use should be encouraged

The bike racks included herein were selected from a wide range of manufactured products. They are intended to be placed within specified areas of downtown, within the permitted furnishing zones of sidewalk corridors and in compliance with all other applicable codes and restrictions. Elements that are “equal” in appearance and performance characteristics may be considered for approval by the Design Guideline Review Committee.

3.2.3 bike racks



BIKE RACK: TRADITIONAL

PRODUCT: *As listed below or approved equal*

- TRYSTAN: *Victorian Plus*

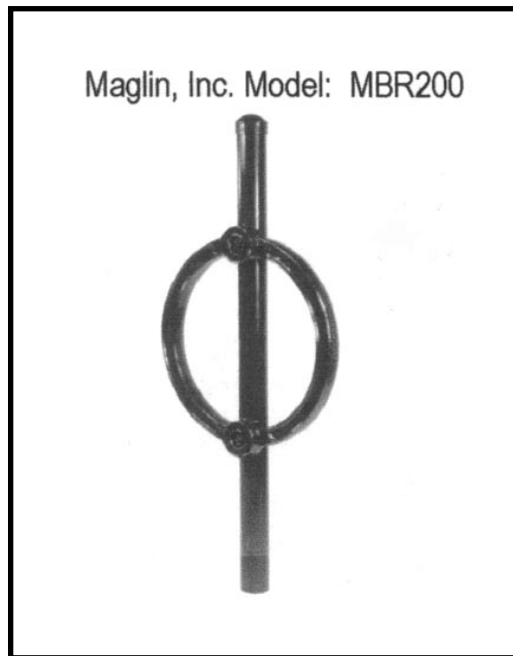
MATERIAL: Cast Steel

FINISH: Black Powdercoat



traditional sub-district

3.2.3 bike racks



BIKE RACK: "ALTERNATE" TRADITIONAL

PRODUCT: *As listed below or approved equal*

- MAGLIN, INC.: Model: MBR200

MATERIAL: Cast Steel

FINISH: Black Powdercoat



traditional sub-district

3.2.3 bike racks



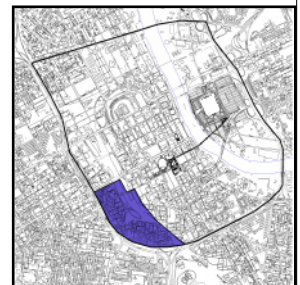
BIKE RACK: CONTEMPORARY

PRODUCT: *As listed below or approved equal*

- TIMBERFORMS: 2172-E-S

MATERIAL: Stainless Steel

FINISH: Stainless Steel



contemporary sub-district

3.2.3 bike racks



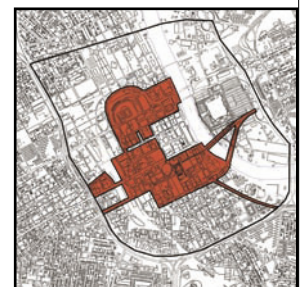
BIKE RACK: CORE

PRODUCT: *As listed below or approved equal*

- LANDSCAPE FORMS: *Pi*

MATERIAL: Cast Steel

FINISH: Black Powdercoat



core sub-district

3.2.4 bollards

Bollards typically come in the form of a short ground-mounted post. But the variety of shapes and degree of ornamentation of the bollards are quite overwhelming. The practical intent for the use of bollards is to provide either real or perceived separation between pedestrian and vehicular uses in the absence of other barriers such as curbing. They can also be used to suggest a spacial boundary for gathering areas, or as ornamentation within the design of an outdoor space.

The following qualities are required of bollards selected for use in downtown Nashville:

- ✓ part of a family of furnishings that are related in style, color and materials to other furnishings
- ✓ the specific family of furnishings is distinctive within a Contextual Sub-District as defined in the Design Guidelines (either Traditional, Contemporary, Core)
- ✓ of sound construction and made of materials/finishes that are durable and resistant to anticipated abuses in the public realm
- ✓ offer ease of maintenance and reduced life cycle cost benefits
- ✓ placed for pedestrian safety and without infringing on the sidewalks clear path-of-travel requirements in the ADA guidelines
- ✓ specific base design may be altered for a removable element

The bollards included herein were selected from a wide range of manufactured products. They are intended to be placed within specified areas of downtown, within the permitted furnishing zones of sidewalk corridors and in compliance with all other applicable codes and restrictions. Elements that are “equal” in appearance and performance characteristics may be considered for approval by the Design Guideline Review Committee.

3.2.4 bollards



BOLLARD: TRADITIONAL

PRODUCT: *As listed below or approved equal*

- TRYSTAN: *Victorian Plus*

MATERIAL: Cast Steel

FINISH: Black Powdercoat

BASE: Fixed or Removable; To be determined by MPW



traditional sub-district

3.2.4 bollards



BOLLARD: CONTEMPORARY

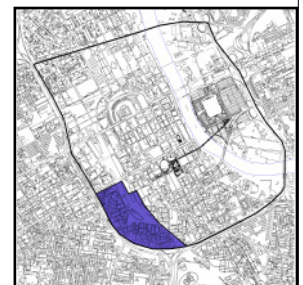
PRODUCT: *As listed below or approved equal*

- TIMBERFORMS: 2190-E-S

MATERIAL: Stainless Steel

FINISH: Stainless Steel

BASE: Fixed or Removable; To be determined by MPW



contemporary sub-district

3.2.4 bollards



BOLLARD: CORE

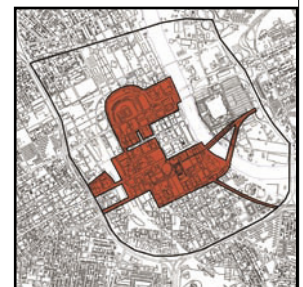
PRODUCT: *As listed below or approved equal*

- TIMBERFORMS: 2190-E-C

MATERIAL: Cast Steel

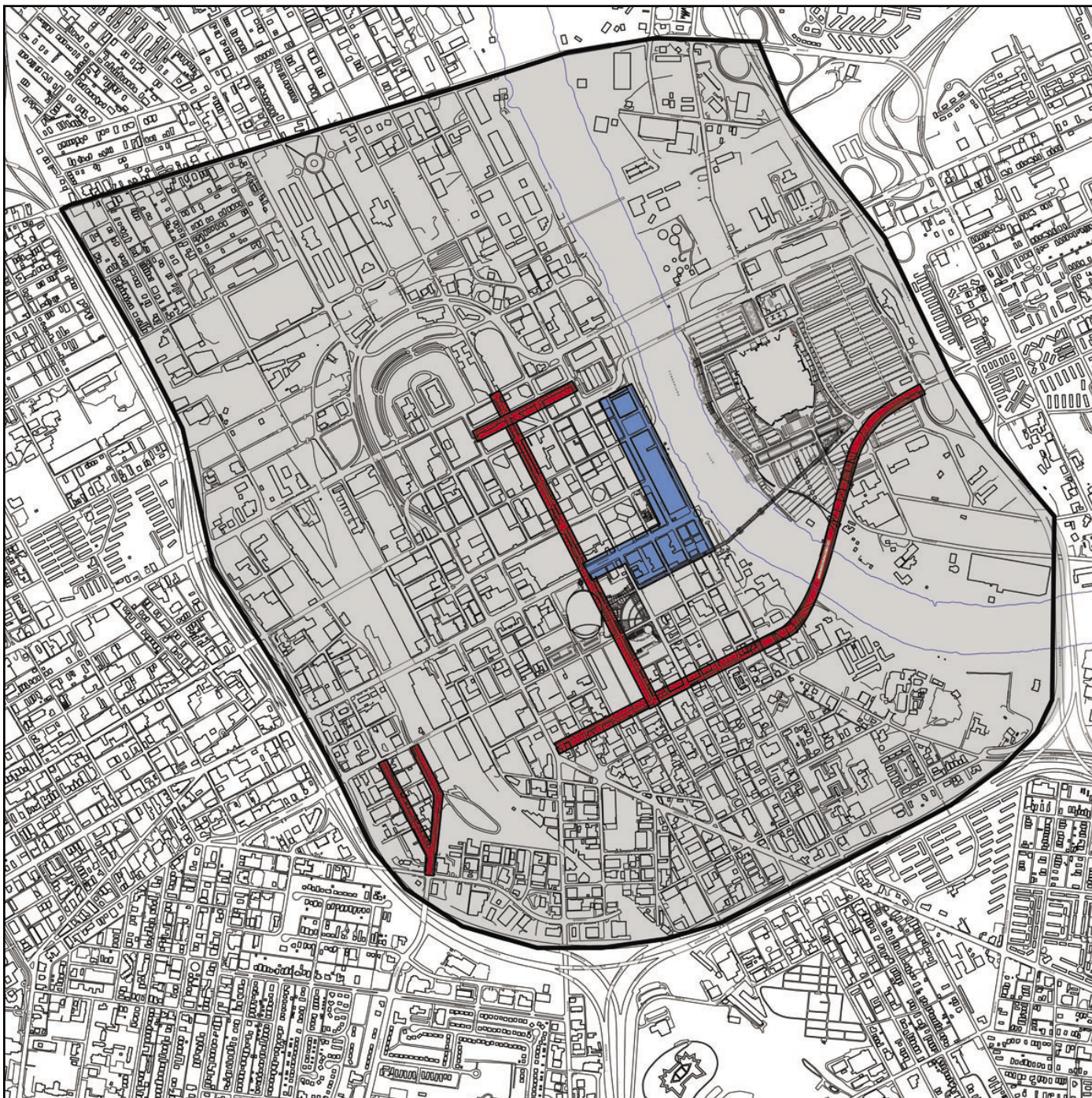
FINISH: Black Powdercoat

BASE: Fixed or Removable; To be determined by MPW



core sub-district

zone map: pavement zones (for use for pavement applications)



legend

| | |
|--------|---|
| zone a |  |
| zone b |  |
| zone c |  |

3.3 paving

Pavement materials and patterns can be one of the strongest unifying elements within the public realm—there is much of it. The proper use of pavements can define spaces, provide a sense of place, and safely designate pedestrian and vehicular movements. The enrichment of the pedestrian experience can be attained with the proper manipulation of streetscape elements. Pavement materials and patterns can contribute to that level of perceived pedestrian comfort in the downtown. It is therefore, important that some basic principals of good design be applied. The selection of pavements should relate to the size and shape of the space to create a sense of order. The use of both patterns and colors should be subdued and avoid sharp contrasts with surrounding paving and building materials. Over designed patterns can become chaotic or dated. Design should be ever mindful and work to complement the materials in context.

From a more practical perspective, the life cycle cost-efficiency of pavements must naturally be of importance to the city. Where possible, strategic use of municipal dollars for infrastructure in the public realm is a powerful determinant in materials selections. A balance has been attempted by focusing enrichment of the public realm with higher quality materials where the value can be most appreciated in the downtown. Allocation of finite resources is then concentrated so that its impact can be intensified.

Replacement and repair considerations have also been strongly considered in the Design Guidelines. Interestingly, a sound installation policy is key in order to maintain structurally stable pavements. Many of the unit masonry pavement systems in downtown have been implemented using a diverse list of setting techniques. (The use of mortared, bituminous, and sand-setting beds have been noted throughout Subarea 9). It is not uncommon that local utility companies must access the subsurface utilities from time to time. In so doing, the masonry paving must be disrupted for the necessary access. Repairing these pavement systems is made more difficult by the diverse installation techniques and generally results in substandard reinstallation of pavements. In the past, the contractor did not always have a defined starting or stopping point when making repairs to pavements. Unfortunately in many instances, the small area of the repair made it impossible for the work to match the quality of the initial installation nor the visual appearance of the surrounding pavement. An example of this is reflected in figure 13.

The Design Guidelines requires the standardized use of a concrete subslab to reduce many of the currently experienced problems, such as settling and visual disruptions in a uniform surface. The use of the



Figure 13; Existing Brick Repair Work

sand setting bed technique will allow for the ease of installation and resetting as the need arises. The use of concrete banding, at a prescribed interval, will ensure that consistent repairs can be made in panels, defined by the concrete bands, to meet original subsurface compaction specifications. Metro shall require that the contractor repair the field of pavers located within the dimensions of the concrete headers rather than repair the small effected area. The referenced diagram indicates a suggestion pattern, though a specific streetscape design will determine the exact spacing of the concrete

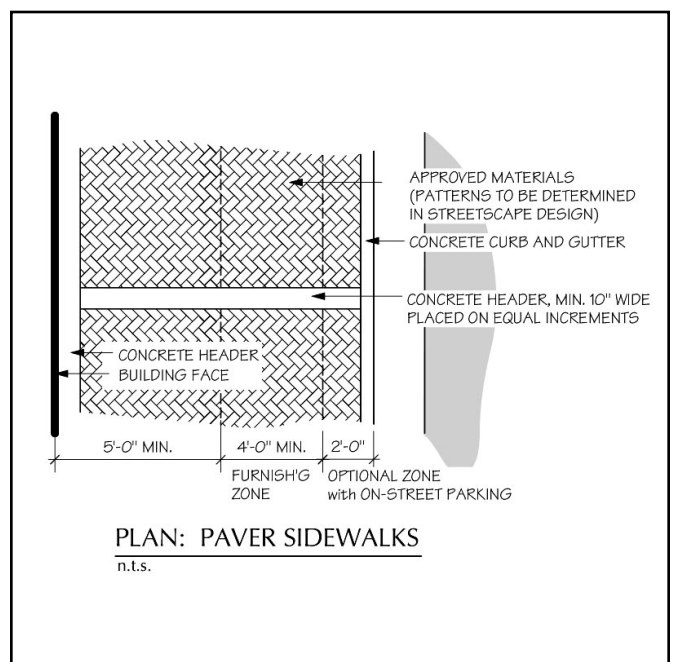


Figure 14; Plan of Possible Pavement Application

header and paver patterns. Refer to figure 14.

A focus of the Design Guidelines is to first establish material standards for pavements used in the public realm and then recommend contextually sensitive guidelines for their uses. In order to best accomplish this, the Steering Committee established three distinct boundaries in Subarea 9 that dictate the use of pavements downtown. (These designated Zones are related to *pavements* only and are separate from the Sub-districts discussed for all other streetscape design elements). These Pavement Zones are more fully defined in the preceding map found on page 88.

3.3.1 sidewalks

Metro Public Works has completed a thorough analysis of all existing sidewalk conditions in Metro Davidson County as part of the Strategic Plan for Sidewalks and Bikeways. As result of the analysis, they are working to repair existing sidewalks and replace damaged and non-ADA compliant sidewalk pavements and ramps throughout the county. All new construction must also comply with current ADA regulations. For many practical reasons most of the sidewalks and ramps will be replaced with standard portland cement white concrete. But in downtown, within the Design Guidelines Subarea 9 boundary, approved materials other than white concrete will be allowed in controlled specified zones.

The Design Guidelines establish three distinct Paving Zones, created by dividing the Subarea into three hierarchical categories; Zones A, B, and C. Refer to the adjacent map figure entitled Pavement Zones as shown on page 88.

Zone A allows for the most enhanced pavement materials and patterns of the three areas. It encompasses the more active streets of the Historic District of downtown and is represented in blue on the map. The intensity of pedestrian use and the slower pace at which the pedestrian circulates through this area provides an opportunity for appreciation of the enriched pavement. The Zone A area also has a very high frequency of use by visitors to the city. It serves as the region's civic, entertainment and cultural epicenter. The multitude of mixed uses are found throughout this 24 hour/7 day-a-week zone—all reasons to maintain the highest standards in Paving Zone A.

Zone A streetscape presence has the highest importance in the study area's streetscape hierarchy. Uniformity of materials and pavement patterns shall stay consistent throughout this zone. Improvements within the R.O.W. that are proposed by individual property Owners must comply with the Design Guidelines for Zone A outlined

herein. The Design Guidelines inform a process of for design throughout Zone A.

Zone A shall utilize from 100% to 80% (by square area) approved "unit masonry pavers" with 0% to 20% concrete. These approved masonry units shall be either brick or brick-shaped concrete pavers or other approved materials. The brick or brick-shaped concrete pavers shall not strongly contrast with existing brick pavements. If used, concrete shall be either portland cement white concrete, integrally colored concrete, exposed aggregate concrete, or stained concrete as approved by Metro Public Works list of approved concrete materials. The required concrete for curb ramps and other necessary elements will not necessarily count towards the allowed maximum 20% of concrete. Zone A is defined in Figure 15.

Masonry paver installation shall be accomplished by a system of sand-swept butt-joint pavers, on a sand setting bed, over a concrete subslab. The 0% to 20% use of concrete (optional) shall be patterned in such a way

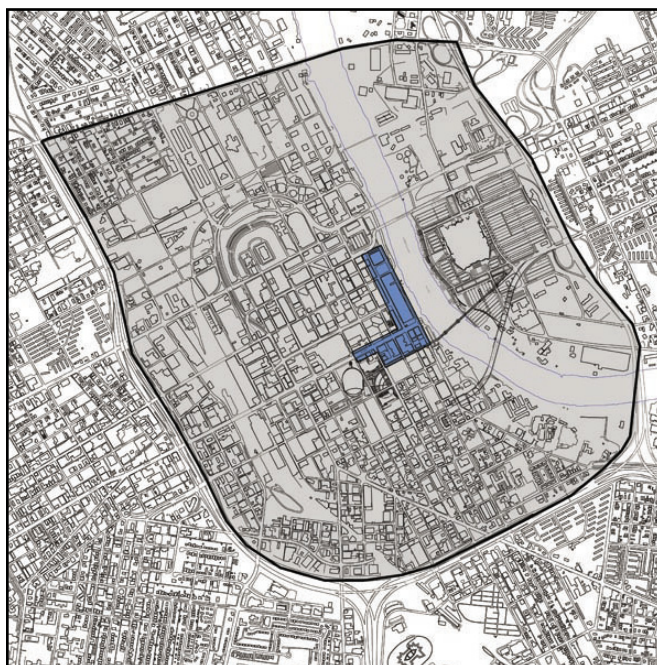


Figure 15; Pavement Zone A

to establish a panel boundary of masonry pavers that enable full repair from subsurface intrusions that meets Metro Public Works installation standards.

Zone B, also denoted as "Celebrated Corridors", requires the use of the second level of hierarchical richness, second only to Zone A pavements. Zone B recognizes important corridors within the downtown that offer, or have the eminent potential for offering, a special pedestrian-friendly quality for the large pedestrian population that might utilize the area. That level of use

is typically driven by close proximity to mixed uses along the corridors such as retail, restaurants, office space, banking, or residences.

Alternatively, the Celebrated Corridors designation may be applied to corridors because of their Civic and historical importance to the urban fabric of Nashville's downtown—related to physical or visual connections to important structures or uses. Celebrated corridors include 5th Avenue of the Arts from Charlotte Avenue to Gateway Boulevard, Deaderick Street, 11th and 12th Avenue from Broadway to Division Streets, and Gateway Boulevard from Interstate Drive to 8th Avenue.

As in Zone A, Zone B shall have a uniform pattern and use of selected materials. The Design Guidelines are not intended to provide a specific pavement design for these corridors. However, the City will provide and administer a design for each of the Celebrated Corridors, exacting a cohesive streetscape experience for the full length of the corridor. The recommendation of these guidelines will establish the approved materials and installation techniques that would then be further developed into a specific design for those corridors.

Zone B pavements shall utilize approximately 75% portland cement concrete and 25% approved unit masonry. The approved unit masonry may be brick pavers or brick-sized concrete pavers. The concrete types may be white, integrally colored, exposed aggregate, or stained. As previously noted, it is critical for the installation and maintenance of these sidewalk materials to be practically design with affordable maintenance in mind. The installation method for the recommended pavers shall be as defined in Zone A



Figure 16; Pavement Zone B

pavements.

Zone C, the remaining sections of the downtown, shall implement portland cement concrete for all sidewalk conditions. This concrete installation shall utilize either the standard white portland cement concrete, exposed aggregate, stained concrete, or integrally colored concrete. Some degree of flexibility in various pavement jointing and patterning may be elected for Zone C, though reasonable standards of practice for concrete installation shall be adhered to and approved by Metro Public Works. The boundaries of Zone C are denoted in gray in figure 16.

Zone A and Zone B do not have an appeal process and, therefore, must comply with the Design Guidelines as outlined herein. In Zone C, should a private entity request to implement alternative materials in the right of way, the current policy will be observed. The entity shall apply for an Encroachment Permit through MPW to assume all future liability for the alternative materials. Following the application filing, the request goes through a Metro Council process for approval through three Council readings. These requested materials must comply with the previously noted approved materials and installation methods.

Sidewalk Pavement Guidelines:

- Maintain a clear path of travel.
- No cross slope shall exceed 2%.
- There shall be no vertical variations in excess of 1/4" within the clear path of travel.
- All masonry sidewalks should be installed per the recommendations.
- All sidewalk pavement shall meet Metro's standards.
- Materials identified herein shall be used in designated Zones. Materials that are "equal" in appearance and performance characteristics may be considered for approval by the Design Guideline Review Committee.

3.3.2 crosswalks

Almost every pedestrian trip includes crossing the street at some point. Corners are the usual place where the majority of pedestrians cross the street. Generally, crosswalks extend the travelway across the street and on to the next block. Because this is the logical place for pedestrians to enter the vehicular zone, it also a place where potential vehicular and pedestrian conflicts and accidents may occur. Crosswalks must be visible to both the motorist and the pedestrians through markings and / or signalization.

These guidelines will encompass recommended materials and installation techniques only. Numerous recommendations and considerations for good crosswalks are noted in the Nashville – Davidson county Strategic Plan for Sidewalks and Bikeways. These recommendations should be considered for new and existing crosswalks.

As mentioned earlier, zone A includes a large portion of the more active areas of the Historic District / Traditional Sub-District and a small portion of the Core Sub-District. Within zone A, the crosswalk materials would involve the use of unit concrete pavers. These pavers would be installed in conjunction with a concrete subslab, sand

setting bed, and concrete headers. The use of a concrete subslab will reduce future settling and disruptions in a uniform surface. The use of the sand setting bed will allow for ease of installation and resetting should the need arise. The use of concrete headers, on a pre-determined interval, would ensure that future repairs could be made in a consistent manner. These headers should align with the existing lane striping. Currently when repairs are made, the contractor does not have a stopping or a starting point. The repairs are made to the immediate area. Unfortunately in many cases, this repair work is not consistent to the surrounding pavement. Refer to figure 17.

By implementing the use of concrete headers on their specified interval, the City could then require that the contractor repairs the field of pavers located within the dimensions of the small area effected. Thus completing a

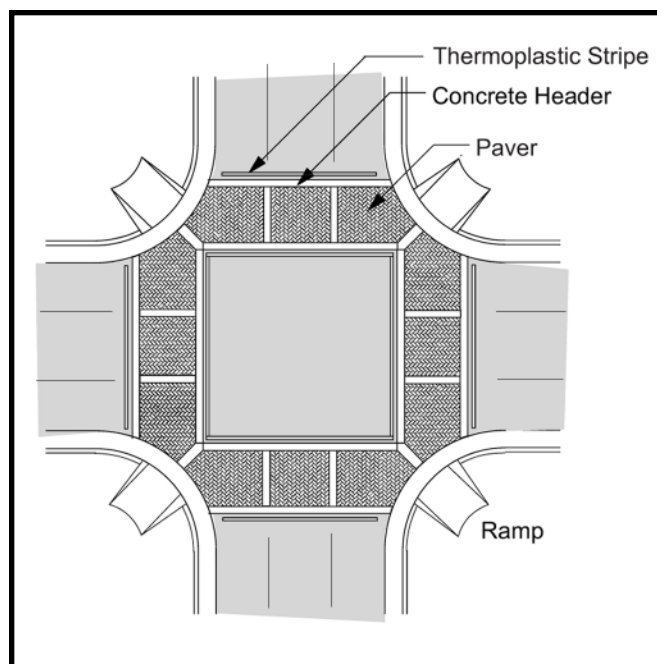


Figure 18; Example of Crosswalk Installation

consistent and uniform segment. Refer to figure 18. The concrete headers would be placed parallel to the crosswalks as well as perpendicular. The perpendicular headers will provide a stopping and starting point for a contractor to do repair work. These pavers must be set in a vertical herringbone pattern in order to provide the strongest interlocking pattern. It is critical that these crosswalks are visible to the motorist at all times of day and even during inclement weather. A white thermoplastic striping will be implemented adjacent to the concrete headers.



Figure 17; Example of Poorly Reinstalled Pavers in Crosswalk

The crosswalks for zone B may incorporate the same installation as for zone A or may utilize the thermoplastic striping commonly referred to as “ladder” or “zebra” striping. Finally, zone C would incorporate the white thermoplastic striping. All striping materials, placement, and stripe width must comply with the Manual on Uniform Traffic Control Devices.

Crosswalk Pavement Guidelines:

- *Crosswalks shall be a minimal 8'-0" wide.*
- *No cross slope can exceed 2%.*
- *There shall be no vertical variations in excess of 1/4" within the clear path of travel.*
- *All masonry crosswalks should be installed per the recommendations.*
- *All crosswalks shall implement reflective thermoplastic striping denoting the edges.*
- *All crosswalks must utilize concrete pavers; no clay brick pavers will be allowed.*
- *Materials identified herein shall be used in designated Zones. Materials that are “equal” in appearance and performance characteristics may be considered for approval by the Design Guideline Review Committee.*

The following elements noted below will be addressed in subsequent editions to the guidelines. For immediate guidance on these elements, contact the noted agencies.

3.3 paving, cont'd (metro public works)

3.3.3 accessible ramps

3.3.4 pedestrian bulbs

3.4 public art (metro arts commission)

3.4.1 process

Public art shall be incorporated into streetscape elements and public spaces in accordance with the Public Art Guidelines established by the Metro Arts Commission and administered by the Public Art Committee.

3.5 planting (metro parks)

3.5.1 street trees

3.5.2 underplantings

3.6 signage (metro public works)

3.6.1 directional

3.6.2 wayfinding

3.6.3 banners

3.6.4 kiosks

3.7 transit shelters (metro transit authority)

4.0 metro review process

Improvements within the public right-of-way shall require a permit from the Metropolitan Department of Public Works.

Applications for improvements to the public right-of-way within the Downtown Community (Subarea 9) planning area must be submitted for review and approval by the Design Guideline Review Committee (DGRC). The DGRC is Chaired by the Director of Public Works, with member representatives from Nashville Electric Service, the Mayor's Office, and Directors (or their designees) from MDHA, and Metro Department of Planning. Contact Metro Public Works for application procedures.

Any applicant who wishes to install a pavement material in the public right-of-way other than that approved by Metro Public Works must apply for an Encroachment Permit under Ordinance No. BL2002-983. This ordinance amends in its entirety Section 13.08.030 of the Metropolitan Code. Under this ordinance, an interested party must obtain the application from Metro Public Works. An official request and appropriate (\$100.00 fee as of 1/1/05) must be made.

As part of the Encroachment Permit agreement, the applicant must provide a liability insurance policy in such amount agreeable to Metro in order to save Metro from any and all claims for damages that may result to an individual or property by way of this encroachment. This request must be approved by three individual Council readings prior to any construction activity.

5.0 implementation and phasing

This document encompasses all of Subarea 9. Some areas of the downtown are evolving at a faster rate than others. Areas that exhibit the most pedestrian activity or that are a key destination points should receive the immediate attention. As redevelopment continues, the Design Guidelines shall be implemented where ever improvements are made to the public realm.

Some Sub-Districts such as the Historic District that have heightened pedestrian activity and that are significant destinations, should receive first priority attention by Metro. Site furnishings can easily be incorporated into the streetscape based on the existing right of way widths. Of the recommended site furnishings, the addition of trash receptacles would be the highest priority. Existing site furnishings that do not relate to the recommended elements should be removed and replaced with the appropriate element.

A subsequent edition of these guidelines will further address the details of an implementation strategy for Metro and recommend an economical and efficient way to administer the implementation of the guidelines. A multi-departmental Streetscape Review Committee will be established to review and approve applications for streetscape improvements in downtown. The directors, or appointed designees, of MDHA, MPW, and MPC will be the responsible parties for the formal review process.

6.0 appendices

Appendix included within:

Appendix A: Design Guidelines: Quick Reference

Support Data Included in Separate Appendices:

Appendix B: 2003 Projected Costs

Appendix C: Illuminating Engineering Society of North America: Classifications




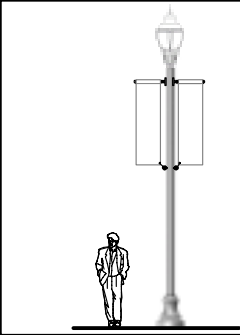
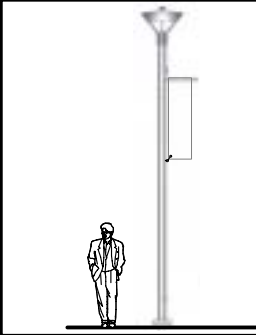
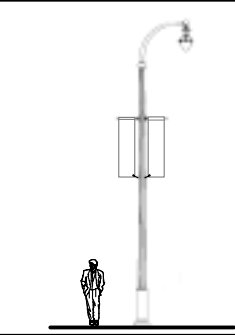
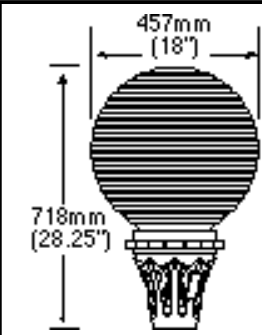
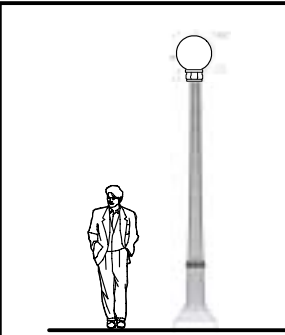
Appendix D: Physical Inventory: Existing Streetlighting, Traffic Signals, Pedestrian Crossing Signals, Benches, Trash Receptacles, and Sidewalk and Crosswalk Pavement Inventory

Appendix E: NES Approved Streetlight Fixtures











Appendix F: Excerpt from the Nashville-Davidson County Strategic Plan for Sidewalks and Bikeways; *Chapter 5: Recommendations*











Appendix G: Excerpt from the Nashville-Davidson County Strategic Plan for Sidewalks and Bikeways; *Appendix B: Section Two: Design Guidelines, C. The Sidewalk Corridor*










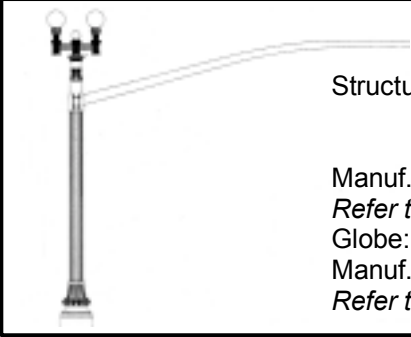
Appendix H: Excerpt from the Nashville-Davidson County Strategic Plan for Sidewalks and Bikeways; *Appendix B: Section Two: Design Guidelines, D. Intersections*














| CONTEXT | TRADITIONAL SUB-DISTRICT | CONTEMPORARY SUB-DISTRICT | CORE SUB-DISTRICT |
|--|--|---|---|
| ELEMENT | Within this subdistrict, one may expect to find traditional building materials, fine grain development with architectural richness, buildings with historic significance and narrow to moderate widths of R.O.W. | Within this subdistrict, one may expect to find fine grain development, traditional building materials used in innovative and contemporary ways. The architectural fabric is decidedly modern. | Within this subdistrict, there is an expectation of diverse characteristics. It tends to have monumental architecture, non-contiguous pockets of rich pedestrian-scaled streetscapes, variety of architectural expression, and scattered historical structures. |
| STREETLIGHT FIXTURE | <div></div> <div>Product: <i>Washington Series w/ Lunar Optics, Ribs, Bands, Medallion, Finial</i> Manuf.: HOLOPHANE Refer to page 27.</div> | <div></div> <div>Product: <i>Viper-R Series</i> Manuf.: USARCHITECTURAL LIGHTING Refer to page 31.</div> | <div></div> <div>Product: <i>Tear Drop: Crystalite</i> Manuf.: HOLOPHANE Refer to page 33.</div> |
| STREETLIGHT POLE | <div></div> <div>Product: <i>SP-5442-F; 16'-0" Fluted Pole (banner rated)</i> Manuf.: HADCO Refer to page 27.</div> | <div></div> <div>Product: <i>RNTA-5" (banner rated)</i> Manuf.: USARCHITECTURAL LIGHTING Refer to page 31.</div> | <div></div> <div>Product: <i>Valmont Fluted Pole (banner rated)</i> Manuf.: VALMONT Refer to page 33.</div> |
| STREETLIGHT FIXTURES FOR SPECIAL AREAS | <div></div> <div>Product: <i>Prismasphere Series</i> Manuf.: HOLOPHANE Refer to page 29.</div> | | |
| STREETLIGHT POLES FOR SPECIAL AREAS | <div></div> <div>Product: <i>P-2555</i> Manuf.: HADCO Refer to page 29.</div> | | |

| CONTEXT | TRADITIONAL SUB-DISTRICT | CONTEMPORARY SUB-DISTRICT | CORE SUB-DISTRICT |
|---|---|---|--|
| ELEMENT | <p>Within this subdistrict, one may expect to find traditional building materials, fine grain development with architectural richness, buildings with historic significance and narrow to moderate widths of R.O.W.</p> | <p>Within this subdistrict, one may expect to find fine grain development, traditional building materials used in innovative and contemporary ways. The architectural fabric is decidedly modern.</p> | <p>Within this subdistrict, there is an expectation of diverse characteristics. It tends to have monumental architecture, non-contiguous pockets of rich pedestrian-scaled streetscapes, variety of architectural expression, and scattered historical structures.</p> |
| MASS TRANSIT SHELTERS (refer to Metro Transit Authority) | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> |
| KIOSKS (refer to Metro Public Works) | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> |
| DIRECTIONAL SIGNAGE (refer to Metro Public Works) | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> |
| WAYFINDING SIGNAGE (refer to Metro Public Works) | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> |

| CONTEXT | ZONE A | ZONE B | ZONE C |
|----------|---|--|---|
| EXAMPLES | <p>Zone A integrates more detail in paving due to the larger volume of pedestrian traffic. This zone utilizes pavers, brick and/ or concrete pavers, and concrete. The percentage of pavers may be no less than 80% with no more than 20% concrete.</p> | <p>Zone B also experiences large volumes of pedestrian traffic, though not to the degree as Zone A. This zone utilizes pavers, brick and/ or concrete pavers, and specialty concrete. The percentage of pavers may be no more than 25% with no less than 75% specialty concrete.</p> | <p>Zone C utilizes the use of standard white concrete as well as specialty concrete. The use of scored patterns are encouraged to help define space. This zone may be upgraded to zone B through an Encroachment Permit obtainable from Metro Public Works.</p> |
| |  <p>This streetscape employs the use of 100% brick pavers.</p> |  <p>This streetscape employs the use of approximately 10% brick pavers integrated into a standard white concrete sidewalk.</p> |  <p>This streetscape utilizes a standard white concrete sidewalk with a scored pattern to define the furnishing zone.</p> |
| |  <p>This streetscape employs the use of approximately 80% brick pavers and integrated concrete headers.</p> |  <p>This streetscape incorporates concrete pavers within the furnishing zone with a standard white concrete sidewalk.</p> |  <p>This streetscape incorporates a standard white concrete sidewalk.</p> |
| |  <p>This streetscape employs the use of approximately 80% brick pavers and integrated concrete headers.</p> |  <p>This streetscape incorporates assorted concrete pavers within the furnishing zone with a standard white concrete sidewalk.</p> | |
| |  <p>This streetscape employs the use of 100% concrete pavers.</p> |  <p>This streetscape employs the use of brick paver panels with integrated concrete headers.</p> | |

| CONTEXT | ZONE A | ZONE B | ZONE C |
|----------|--|---|---|
| EXAMPLES | <p>Zone A, Crosswalks, would respond to the level of detailed pavement called for in Zone A, Sidewalks. These crosswalks would utilize concrete pavers with several integrated concrete headers.</p> | <p>Zone B, Crosswalks, would respond to the level of detailed pavement materials called for in Zone B, Sidewalks. These crosswalks would be allowed the option of utilizing concrete pavers with several integrated concrete headers or thermoplastic striping.</p> | <p>Zone C utilizes the use of thermoplastic striping.</p> |
| | <div><p>This intersection incorporates brick sized pavers with concrete headers.</p></div> | <div><p>This intersection incorporates brick sized pavers with concrete headers.</p></div> | <div><p>This intersection incorporates standard thermoplastic stripes.</p></div> |
| | <div><p>This intersection incorporates concrete pavers with concrete headers.</p></div> | <div><p>This intersection incorporates brick sized pavers with concrete headers and thermoplastic striping.</p></div> | <div><p>This intersection incorporates the standard thermoplastic ladder (zebra) stripes.</p></div> |
| | <div><p>This intersection incorporates brick sized pavers with thermoplastic striping.</p></div> | <div><p>This intersection incorporates white concrete for the crosswalk.</p></div> | |
| | <div><p>This intersection incorporates concrete pavers with concrete headers.</p></div> | <div><p>This intersection incorporates the thermoplastic striping placed on a diagonal pattern.</p></div> | |

| CONTEXT | TRADITIONAL SUB-DISTRICT | CONTEMPORARY SUB-DISTRICT | CORE SUB-DISTRICT |
|---|---|--|--|
| ELEMENT | Within this subdistrict, one may expect to find traditional building materials, fine grain development with architectural richness, buildings with historic significance and narrow to moderate widths of R.O.W. | Within this subdistrict, one may expect to find fine grain development, traditional building materials used in innovative and contemporary ways. The architectural fabric is decidedly modern. | Within this subdistrict, there is an expectation of diverse characteristics. It tends to have monumental architecture, non-contiguous pockets of rich pedestrian-scaled streetscapes, variety of architectural expression, and scattered historical structures. |
| TRAFFIC SIGNAL STRUCTURES | <div></div> <div>Product: <i>Poles, Mast Arms, and Clam Shell Base</i> Manuf.: VISCO <i>Refer to page 37.</i></div> | <div></div> <div>Product: <i>Smooth Round Post w/ Standard Curved Mast Arm</i> Manuf.: VALMONT <i>Refer to page 41.</i></div> | <div></div> <div>Product: <i>16 Fluted Pole w/ Std. Smooth Curve Mast Arm, Renaissance Base</i> Manuf.: VALMONT <i>Refer to page 43.</i></div> |
| STREETLIGHT FIXTURES | <div></div> <div>Product: <i>Washington Series w/ Lunar Optics, Ribs, Bands, Medallion, Finial w/ Hadco Twin Arms</i> Manuf.: HOLOPHANE <i>Refer to page 27.</i></div> | <div></div> <div>Product: <i>Viper-R Series</i> Manuf.: USARCHITECTURAL LIGHTING <i>Refer to page 31.</i></div> | <div></div> <div>Product: <i>Washington Series w/ Lunar Optics, Ribs, Bands, Medallion, Finial w/ Hadco Twin Arms</i> Manuf.: HOLOPHANE <i>Refer to page 27.</i></div> |
| PEDESTRIAN SIGNAL POLES | <div></div> <div>Product: <i>8' Fluted Pole w/ Clam Shell Base</i> Manuf.: VISCO <i>Refer to page 45.</i></div> | <div></div> <div>Product: <i>8' Round Smooth Pole w/ Low Base</i> Manuf.: VALMONT <i>Refer to page 47.</i></div> | <div></div> <div>Product: <i>8' Fluted Pole w/ Renaissance Base</i> Manuf.: VALMONT <i>Refer to page 49.</i></div> |
| "ALTERNATE" TRADITIONAL TRAFFIC SIGNAL STRUCTURES | <div></div> <div>Structure: <i>Poles, Mast Arms, and Clam Shell Base</i> Manuf.: VISCO <i>Refer to page 39.</i> Globe: <i>Prismasphere Series w/</i> Manuf.: HOLOPHANE <i>Refer to page 27.</i></div> | | |

| CONTEXT | TRADITIONAL SUB-DISTRICT | CONTEMPORARY SUB-DISTRICT | CORE SUB-DISTRICT |
|-------------------|--|---|--|
| ELEMENT | <p>Within this subdistrict, one may expect to find traditional building materials, fine grain development with architectural richness, buildings with historic significance and narrow to moderate widths of R.O.W.</p> | <p>Within this subdistrict, one may expect to find fine grain development, traditional building materials used in innovative and contemporary ways. The architectural fabric is decidedly modern.</p> | <p>Within this subdistrict, there is an expectation of diverse characteristics. It tends to have monumental architecture, non-contiguous pockets of rich pedestrian-scaled streetscapes, variety of architectural expression, and scattered historical structures.</p> |
| BENCHES | <div><p>Product: <i>Plainwell</i> Manuf.: LANDSCAPE FORMS</p><p><i>Refer to page 57.</i></p></div> | <div><p>Product: <i>Chase Park</i> Manuf.: LANDSCAPE FORMS</p><p><i>Refer to page 59.</i></p></div> | <div><p>Product: <i>Petosky</i> Manuf.: LANDSCAPE FORMS</p><p><i>Refer to page 61.</i></p></div> |
| TRASH RECEPTACLES | <div><p>Product: <i>Plainwell</i> Manuf.: LANDSCAPE FORMS</p><p><i>Refer to page 65.</i></p></div> | <div><p>Product: <i>Chase Park</i> Manuf.: LANDSCAPE FORMS</p><p><i>Refer to page 67.</i></p></div> | <div><p>Product: <i>Petosky</i> Manuf.: LANDSCAPE FORMS</p><p><i>Refer to page 69.</i></p></div> |
| BIKE RACKS | <div><p>Product: <i>Victorian</i> Manuf.: TRYSTAN <i>Refer to page 73.</i></p><p>"ALTERNATE" TRADITIONAL</p><div></div><p>Product: <i>MBR200</i> Manuf.: MAGLIN, INC. <i>Refer to page 75.</i></p></div> | <div><p>Product: <i>Bollard Cycloops</i> Manuf.: TIMBERFORMS</p><p><i>Refer to page 77.</i></p></div> | <div><p>Product: <i>Pi</i> Manuf.: LANDSCAPE FORMS</p><p><i>Refer to page 79.</i></p></div> |
| BOLLARDS | <div><p>Product: <i>Victorian</i> Manuf.: TRYSTAN</p><p><i>Refer to page 83.</i></p></div> | <div><p>Product: <i>Metal Bollard</i> Manuf.: TIMBERFORMS</p><p><i>Refer to page 85.</i></p></div> | <div><p>Product: <i>Metal Bollard</i> Manuf.: TIMBERFORMS</p><p><i>Refer to page 87.</i></p></div> |

| CONTEXT | TRADITIONAL SUB-DISTRICT | CONTEMPORARY SUB-DISTRICT | CORE SUB-DISTRICT |
|--|---|---|--|
| ELEMENT | <p>Within this subdistrict, one may expect to find traditional building materials, fine grain development with architectural richness, buildings with historic significance and narrow to moderate widths of R.O.W.</p> | <p>Within this subdistrict, one may expect to find fine grain development, traditional building materials used in innovative and contemporary ways. The architectural fabric is decidedly modern.</p> | <p>Within this subdistrict, there is an expectation of diverse characteristics. It tends to have monumental architecture, non-contiguous pockets of rich pedestrian-scaled streetscapes, variety of architectural expression, and scattered historical structures.</p> |
| BANNERS (refer to Mayor's Office of Special Events) | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> |
| TREE GRATES and FRAMES (refer to Metro Public Works) | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> |
| STREET TREES (refer to Metro Parks) | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> |
| UNDERPLANTINGS (refer to Metro Parks) | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> | <p>Product: Manuf.:</p> <p>Refer to page __.</p> |

appendix b: 2003 projected costs

DOWNTOWN STREETSCAPE ELEMENTS GUIDELINES PALETTE COSTS per 2003 COSTS

| ZONE | RETAIL COST | TRADE COST | INSTALLATION | TOTAL COST |
|--|-------------|-------------|--------------|-------------|
| TRADITIONAL | | | | |
| SITE ELEMENTS: | | | | |
| Landscape Forms | | | | |
| 72" PLAINWELL bench w/ (1) center arm | \$ 3,100.00 | \$ 1,550.00 | \$ 600.00 | \$ 2,150.00 |
| 96" PLAINWELL bench w/ (2) center arms | \$ 4,040.00 | \$ 2,020.00 | \$ 600.00 | \$ 2,620.00 |
| PLAINWELL trash recept w/ top opening | \$ 1,800.00 | \$ 900.00 | \$ 200.00 | \$ 1,100.00 |
| PLAINWELL trash recept w/ side opening / sand pan | \$ 1,960.00 | \$ 980.00 | \$ 200.00 | \$ 1,330.00 |
| Sand Pan Up Charge | | \$ 150.00 | | |
| Trystan | | | | |
| VICTORIAN bollard | | \$ 423.00 | \$ 200.00 | \$ 623.00 |
| VICTORIAN bollard plus (bike rack) | | \$ 626.00 | \$ 200.00 | \$ 826.00 |
| CONTEMPORARY | | | | |
| SITE ELEMENTS: | | | | |
| Landscape Forms | | | | |
| CHASE PARK bench | \$ 3,200.00 | \$ 1,600.00 | \$ 600.00 | \$ 2,200.00 |
| CHASE PARK trash recept w/ top opening | \$ 2,850.00 | \$ 1,425.00 | \$ 200.00 | \$ 1,625.00 |
| CHASE PARK trash recept w/ side opening, sand pan | \$ 2,950.00 | \$ 1,475.00 | \$ 200.00 | \$ 1,805.00 |
| Sand Pan Up Charge | | \$ 130.00 | | |
| Timberforms / Columbia Cascade | | | | |
| Bollard - Stainless Steel (2190 - E -S) | | \$ 270.00 | \$ 200.00 | \$ 470.00 |
| Bike Rack - Stainless Steel (2172-E-S, double loops) | | \$ 460.00 | \$ 200.00 | \$ 660.00 |
| Dumor | | | | |
| Bollard - Powdercoated | | \$ 172.00 | \$ 200.00 | \$ 372.00 |
| Bike Rack - Powdercoated | | \$ 249.00 | \$ 200.00 | \$ 449.00 |
| CORE | | | | |
| SITE ELEMENTS: | | | | |
| Landscape Forms | | | | |
| PETOSKY bench (metal rod) | \$ 2,300.00 | \$ 1,150.00 | \$ 600.00 | \$ 1,900.00 |
| Center Arm Up Charge | | \$ 150.00 | | |
| PETOSKY bench (perf. metal) | \$ 1,970.00 | \$ 985.00 | \$ 600.00 | \$ 1,735.00 |
| Center Arm Up Charge | | \$ 150.00 | | |
| PETOSKY trash recept | \$ 1,650.00 | \$ 825.00 | \$ 200.00 | \$ 1,025.00 |
| PETOSKY trash recept w/ sand pan | \$ 1,650.00 | \$ 825.00 | \$ 200.00 | \$ 1,155.00 |
| Sand Pan Up Charge | | \$ 130.00 | | |
| PI bike rack | \$ 420.00 | \$ 210.00 | \$ 200.00 | \$ 410.00 |
| Timberforms / Columbia Cascades | | | | |
| Bollard (2190-E-C, standard color - black) | | \$ 90.00 | \$ 200.00 | \$ 290.00 |
| Dumor | | | | |
| Bollard | | | \$ 200.00 | \$ 200.00 |

*** Prices quoted are generally good for 30 days and would need to be confirmed at time of ordering

*** Prices quoted are unit costs and would be subject to a discount as quantities increased

*** Shipping and handling charges are not included

*** Taxes are not included

*** Contractor mark up is not applied; generally 15-20%

appendix b: 2003 projected costs

DOWNTOWN STREETSCAPE ELEMENTS GUIDELINES PALETTE COSTS per 2003 COSTS

| PRODUCT: | | FIXTURE TYPE: | | POLE HT. | FIXTURE COST | POLE COST | TOTAL UNIT COST | INSTALLED COST | TOTAL INSTALLED COST | Units per 500' block | Block Costs for |
|--------------------|------------------------------|---|-------------------|-------------|--------------|-------------|-----------------|----------------|----------------------|----------------------|-----------------|
| TRADITIONAL | | | | | | | | | | | |
| HOLOPHANE: | | | | | | | | | | | |
| TRAFFIC SIGNALS | 2 lanes + 1 turning | single PRISMASPHERE (150W HPS) | 12' tall pole | \$ 748.70 | \$ 1,000.00 | \$ 1,748.70 | \$ 2,000.00 | \$ 3,748.70 | 7 | \$ 26,240.90 | |
| | 110 l.f. on center | single PRISMASPHERE (150W HPS) | 16' tall pole | \$ 748.70 | \$ 1,000.00 | \$ 1,748.70 | \$ 2,000.00 | \$ 3,748.70 | 9 | \$ 33,738.30 | |
| | 125 l.f. on center | single WASHINGTON (250W HPS) | 16' tall pole | \$ 982.00 | \$ 1,000.00 | \$ 1,982.00 | \$ 2,200.00 | \$ 4,182.00 | 7 | \$ 29,274.00 | |
| | 4 lanes + 1 turning | single PRISMASPHERE (150W HPS) | 12' tall pole | \$ 748.70 | \$ 1,000.00 | \$ 1,748.70 | \$ 2,200.00 | \$ 3,948.70 | 9 | \$ 35,538.30 | |
| | 110 l.f. on center | single PRISMASPHERE (150W HPS) | 16' tall pole | \$ 748.70 | \$ 1,000.00 | \$ 1,748.70 | \$ 2,200.00 | \$ 3,948.70 | 10 | \$ 39,487.00 | |
| 100 l.f. on center | single WASHINGTON (250W HPS) | 16' tall pole | \$ 982.00 | \$ 1,000.00 | \$ 1,982.00 | \$ 2,200.00 | \$ 4,182.00 | 9 | \$ 37,638.00 | | |
| TRAFFIC SIGNALS | | | | | | | | | | | |
| CORE | 2 lanes + 1 turning | Valmont Traffic Poles, mast arms, materials, labor (Does not include signal displays, light fixtures, conduit, wiring) | | | | | | \$ 10,800.00 | 4 | \$ 43,200.00 | |
| | 4 lanes + 1 turning | Valmont Traffic Poles, mast arms, materials, labor (Does not include signal displays, light fixtures, conduit, wiring) | | | | | | \$ 12,800.00 | 4 | \$ 51,200.00 | |
| CORE | | | | | | | | | | | |
| HOLOPHANE: | | | | | | | | | | | |
| TRAFFIC SIGNALS | 2 lanes + 1 turning | Single TEAR DROP (150W HPS) w/Valmont pole/ ren base | 25' pole / 3' arm | \$ 839.50 | \$ 2,500.00 | \$ 3,339.50 | \$ 2,000.00 | \$ 5,339.50 | 9 | \$ 48,055.50 | |
| | 100 l.f. on center | Single TEAR DROP (150W HPS) w/Valmont pole/ ren base | 25' pole / 3' arm | \$ 839.50 | \$ 2,500.00 | \$ 3,339.50 | \$ 1,880.00 | \$ 5,219.50 | 11 | \$ 57,414.50 | |
| | 4 lanes + 1 turning | Valmont Traffic Poles, mast arms, materials, labor (Does not include signal displays, light fixtures, conduit, wiring) | | | | | | \$ 8,800.00 | 4 | \$ 35,200.00 | |
| CONTEMPORARY | 4 lanes + 1 turning | Valmont Traffic Poles, mast arms, materials, labor (Does not include signal displays, light fixtures, conduit, wiring) | | | | | | \$ 10,400.00 | 4 | \$ 41,600.00 | |
| | USArchitectural: | | | | | | | | | | |
| TRAFFIC SIGNALS | 2 lanes + 1 turning | Single VIPER-R | 16' tall pole | \$ 885.00 | \$ 715.00 | \$ 1,600.00 | \$ 1,800.00 | \$ 3,400.00 | 12 | \$ 40,800.00 | |
| | 75 l.f. on center | Single VIPER-R | 16' tall pole | \$ 885.00 | \$ 715.00 | \$ 1,600.00 | \$ 1,800.00 | \$ 3,400.00 | 12 | \$ 40,800.00 | |
| | 4 lanes + 1 turning | Valmont Traffic Poles, mast arms, materials, labor (Does not include signal displays, light fixtures, conduit, wiring) | | | | | | \$ 6,700.00 | 4 | \$ 26,800.00 | |
| ROADWAY | 4 lanes + 1 turning | Valmont Traffic Poles, mast arms, materials, labor (Does not include signal displays, light fixtures, conduit, wiring) | | | | | | \$ 7,800.00 | 4 | \$ 31,200.00 | |
| | USArchitectural: | | | | | | | | | | |
| ROADWAY | 2 lanes + 1 turning | COBRA HEAD (150W HPS) | 30' Davit pole | \$ 700.00 | | \$ 700.00 | \$ 2,000.00 | \$ 2,700.00 | 9 | \$ 24,300.00 | |
| | 100 l.f. on center | COBRA HEAD (150W HPS) | | \$ 700.00 | | \$ 700.00 | \$ 1,880.00 | \$ 2,580.00 | 11 | \$ 28,380.00 | |
| ROADWAY | 4 lanes + 1 turning | | | | | | | | | | |
| | 85 l.f. on center | | | | | | | | | | |

appendix c: cutoff classifications



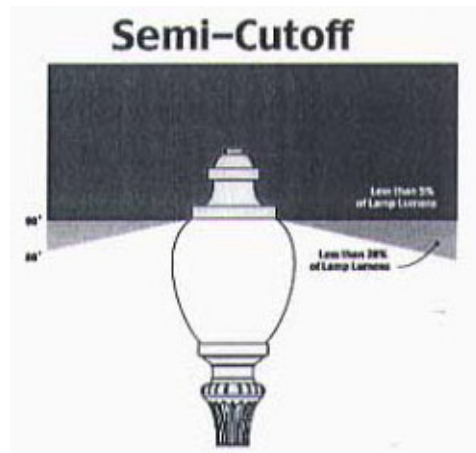
The benefits include:

- Perceived reduction in sky glow
- Excellent light control at property lines
- Limits light trespass
- Reduces glare
- No up-lighting allowed

The limitations include:

- Reduces pole spacing
- Increase pole and luminaire quality
- Least cost effective of all cutoff categories
- Concentrated down light component results in maximum reflected up light
- Potential to have decreased uniformity due to higher levels directly under the pole
- Limited number of luminaire styles

appendix c: cutoff classifications



The benefits include:

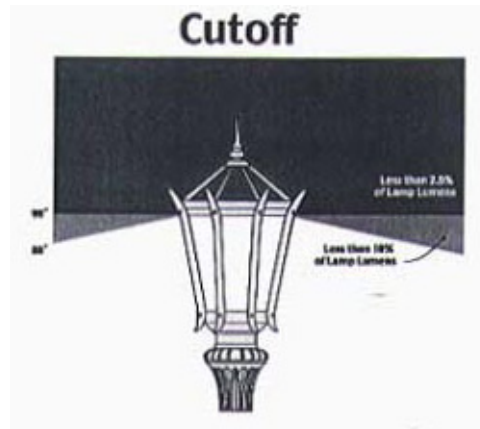
- Potential for increased pole spacing and lower overall power consumption compared to cutoff
- High angle light accents taller surfaces
- Less reflective light off pavement than cutoff luminaires
- Vertical illumination increases pedestrian security and sense of safety
- Large selection of luminaires to choose from

The limitations include:

- Greater potential for direct up-lighting than cutoff luminaires
- Light trespass a concern in residential areas
- Increase high angle light compared to cutoff

Non-cutoff - limitation on light distribution at any angle

appendix c: cutoff classifications



The benefits include:

- Small increase in high-angle light
- Limited light trespass
- Potential for increased pole spacing and lower overall power consumption compared to full cutoff
- More luminaire style available than full cutoff

The limitations include:

- Does allow some up-lighting
- Light control at property lines is less than full cutoff
- Reflection off pavement can increase sky glow

Semi-cutoff - no more than 5% of lamp lumens above 90 degrees and only 20% above 80 degrees

appendix c: cutoff classifications

Non-Cutoff

No Limitation Intensity



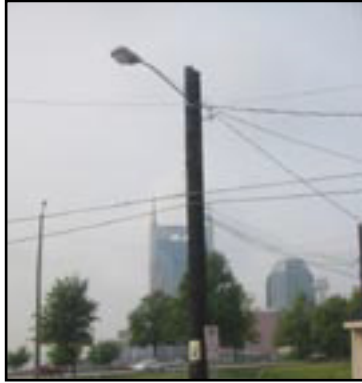
The benefits include:

- Potential for the maximum pole spacing and lower overall power consumption
- Accents taller surfaces
- Highest vertical illumination for increased safety and security
- Excellent uniformity
- Least amount of reflective light off the pavement
- Largest selection of luminaires to choose from

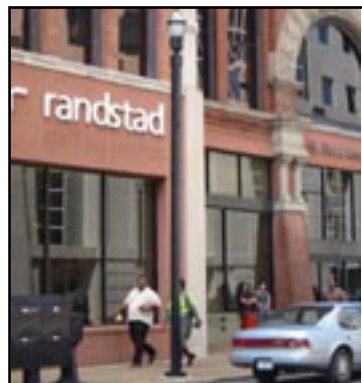
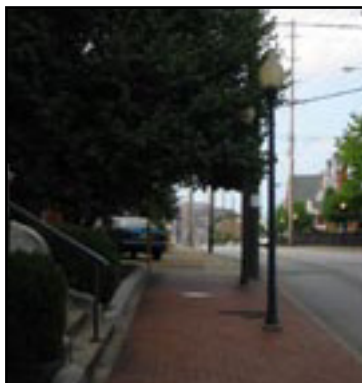
The limitations include:

- Greatest potential for direct up-lighting
- Least control for light trespass
- Least control of aiming
- Greatest potential for glare

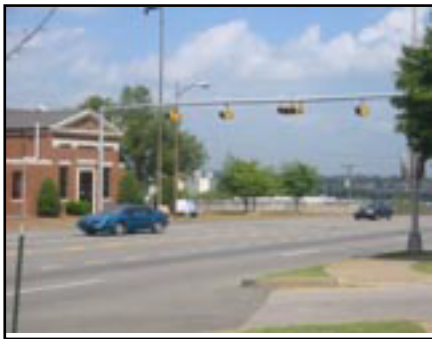
appendix d: existing inventory: streetlights



appendix d: existing inventory: streetlights



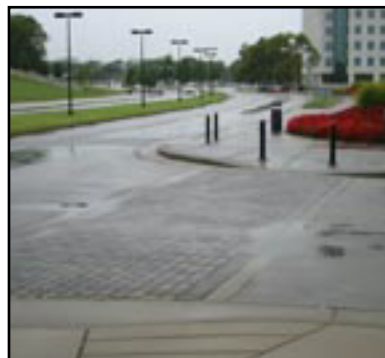
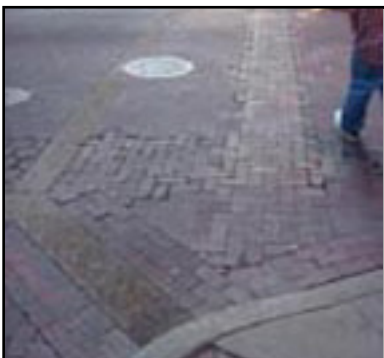
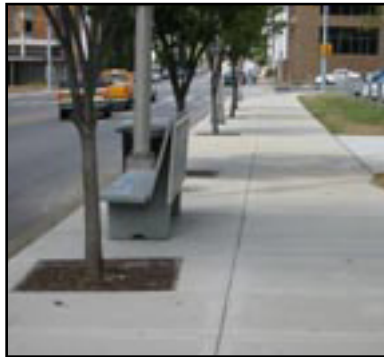
appendix d: existing inventory: traffic control structures



appendix d: existing inventory: benches and trash receptacles

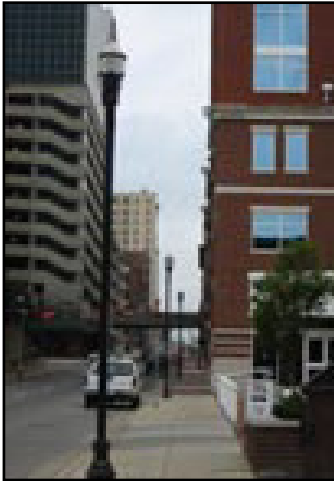


appendix d: existing inventory: pavement



appendix e: NES approved fixtures (prior to 2003 Design Guidelines development)

acorn



Acorn Light: The light manufacturer is Holophane. The light is used with a 16'-0" Hadco decorative pole. Also, a twin bracket can be used.

mongoose



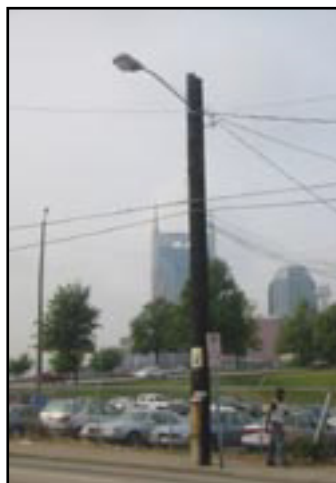
Mongoose: The light manufacturer is Holophane. The light is used with a silver toned 35' aluminum pole.

tear drop



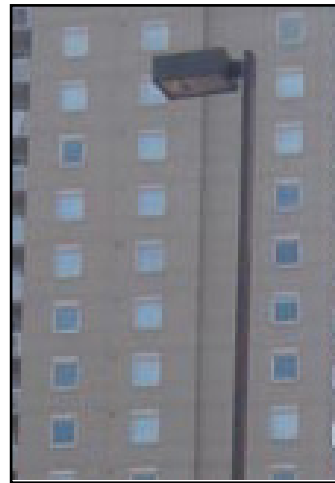
Tear Drop: The light manufacturer is Holophane. The light is used with a 25' Valmont decorative pole.

cobrahead



Standard cobrahead light used with a variety of poles.

shoebox



Shoebox: The light manufacturers are Cooper & American Electric. Used with 25' aluminum or steel poles.

appendix f: nashville-davidson county sidewalk and bikeway plan: chapter 5: recommendations

RECOMMENDATIONS



information supplied. Doing so will ensure that the sidewalk priorities reflect new development or other land use changes in Davidson County. Because the SPI characteristics and number values themselves may need to be refined over time, it is recommended that they be re-evaluated at least every two years.

THE PEDESTRIAN FACILITIES DESIGN GUIDELINES

The complete *Pedestrian Facilities Design Guidelines* are located in Appendix B. The standards and practices outlined in that document are intended to provide guidance on the design of pedestrian-specific facilities. They are also intended to provide guidance on the integration of pedestrian accommodations into all projects that have the potential to affect pedestrian travel in Davidson County. Application of the guidelines will ensure consistency in the design of the facilities. Consistency will provide pedestrians with assurance regarding the safety and quality of the walking facilities that they will encounter. It will also encourage both pedestrians and motorists to operate predictably with each other on public right-of-way.

The design guidelines were developed by the consulting team in response to the specific needs, objectives, and circumstances of Nashville and Davidson County. They are based on standard and emerging practices used throughout the country. The standards recommended in the guidelines are consistent with the requirements of the ADA. The ADA is a federal law that ensures that public facilities are designed in a manner that provides access to those with physical mobility impairments. Specifically, the pedestrian design guidelines comply with *Building a True Community; Final Report of the Public Rights-of-Way Access Advisory Committee*, the most authoritative existing guide to accessible right-of-way design available when this plan was developed. The Pedestrian Facilities Design Guidelines are divided into sections that include:

- The sidewalk corridor, which consists of facilities that allow people to walk along a street



The Pedestrian Facilities Design Guidelines were developed to provide guidance on the design of pedestrian specific facilities in Metro Nashville.

- Intersections, which address facilities that allow people to cross the street
- Pedestrian enhancements such as curb extensions, raised crosswalks and pedestrian refuges
- Other design issues, such as construction zones and transit stops

These sections offer detailed counsel on Metro-specific issues related to sidewalk construction on new streets, sidewalk construction on existing streets, pedestrian improvements at existing intersections, and sidewalk construction during roadway widening projects.

THE SIDEWALK CORRIDOR

The Sidewalk Corridor is a term applied to that portion of the public right-of-way located between the edge of motor vehicle, bicycle and/or parking lanes, and the outside edge of the right-of-way. The primary function of a Sidewalk Corridor is to provide a safe, comfortable, and convenient route for walking that is separated from vehicle travel paths. A Sidewalk Corridor may also accommodate other functions or fixtures, such as utility poles and street furniture.

Sidewalk Corridors should possess the following qualities:

- Accessible: Sidewalk Corridors should be easy to use for travelers of all abilities.
- Adequate Width: Sidewalk Corridors should be wide enough so that pedestrians can



- pass each other comfortably.
- **Direct:** Sidewalk Corridors should provide direct routes that minimize out-of-direction travel for pedestrians.
- **Continuous:** The design of Sidewalk Corridors should ensure that the pedestrian path of travel is easily identifiable along the entire length of the corridor.
- **Safe:** Sidewalk Corridors should provide pedestrians with real and perceived safety.
- **Landscaped:** Sidewalk Corridors should be designed to accommodate street trees and other landscaping.
- **Compatible with the community:** A Sidewalk Corridor should be designed to contribute to the land use, design, and transportation objectives of the neighborhood through which it travels.³⁸

As shown in Figure 5.4, Sidewalk Corridors are divided into three distinct zones:

- Furnishings Zone
- Pedestrian Travelway
- Frontage Zone

Each zone varies in width depending on street classification. In general, the greater the traffic volume or speed, the wider the width of each zone. Table 5.2 shows the recommended widths for each zone, based on street classification.

The Furnishings Zone (FNZ) provides a physical buffer between the pedestrian path and vehicular traffic. It also provides a space for streetscape features such as trees, utility poles, mailboxes, newspaper boxes, and other similar features. Depending on street classification, the FNZ should be at least four to six feet wide.



A sidewalk in Chicago featuring a furnishings zone, a pedestrian travelway, and a frontage zone.

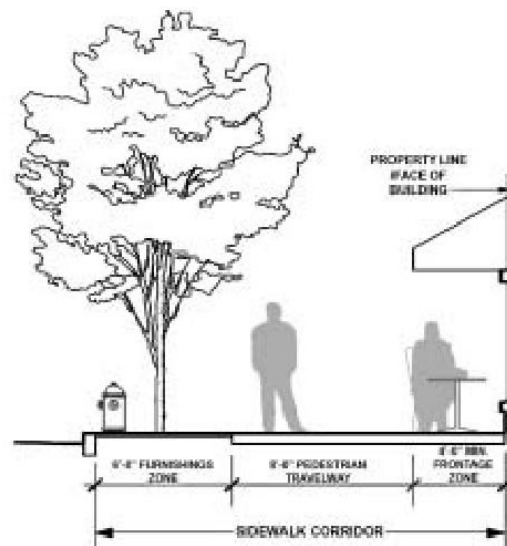


Figure 5.4: Sidewalk Corridor Zones for Arterial Streets

| | Local streets or equivalent | Collector streets or equivalent | Arterial streets or equivalent |
|----------------------|-----------------------------|---------------------------------|--------------------------------|
| Pedestrian Travelway | Five feet minimum | Six feet minimum | Eight feet minimum |
| Furnishings Zone | Four feet minimum | Five feet minimum | Six feet minimum |
| Frontage Zone | NA | NA | Four feet minimum |

Table 5.2: Recommended minimum widths for zones within the sidewalk corridor.

³⁸ Access Advisory Board, *Building A True Community: Final Report of the Public Rights-of-Way Access Advisory Committee*



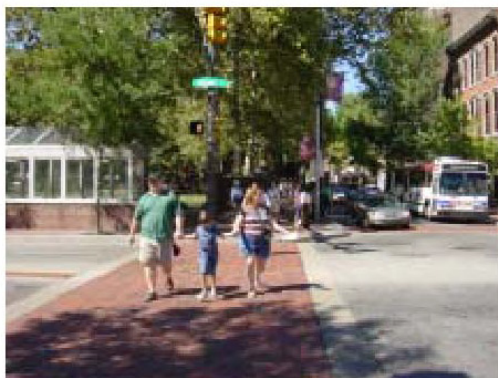
The Pedestrian Travelway (PT) is the portion of the sidewalk corridor which provides unobstructed travel by pedestrians, i.e., the sidewalk. Depending on street classification, the PT should be at least five to eight feet wide.

The Frontage Zone (FTZ) is the area between the pedestrian travelway and the edge of the right-of-way or building face. Typically applied only to urban commercial streets, the FTZ provides space for street cafes, window shopping, bus stop furnishings and other features. The FTZ, where applicable, should be at least four feet wide.

In some instances, it may be appropriate to build alternate types of pedestrian facilities. Such facilities include off-street pedestrian connectors and rural pedestrian facilities. Off-street connectors are short-distance paths that provide direct access to a destination, or a linkage between conventional sidewalks, which would otherwise require out-of-direction travel on streets. Rural pedestrian needs may be best accommodated with facilities that are designed to be compatible with their rural context, such as a path that is separated from the un-curbed road with a swale or other physical barrier.

INTERSECTIONS

Without good pedestrian accommodations, intersections can become significant barriers to pedestrian travel. Because they place pedestrians and vehicle operators in conflict with



Good crosswalks should be short and highly visible to provide adequate crossing for pedestrians, like this crosswalk in Philadelphia.



Curb extensions are effective in reducing crossing distances for pedestrians at intersections.

one another, intersections warrant careful attention to pedestrian accommodations. Intersections should be designed to possess the following characteristics:

- **Short Crossings:** In general, curb-to-curb crossing distance should be as short as possible.
- **Highly Visible:** Pedestrians should be easy for motorists to see, and vice versa.
- **Obstruction-free:** Corners should be free of obstructions that reduce visibility and accessibility.
- **Adequate Size:** Corners should be large enough to accommodate sidewalk ramps, landings, transit stops, and the expected volume of pedestrians.
- **Obvious:** Signs, markings and signals should clearly indicate to pedestrians, motorists and bicyclists how, where, and when all right-of-way users will operate.
- **Accessible:** Ramps, landings, pedestrian pushbuttons, and all other features should be easy to use for travelers of all abilities.
- **Separation from traffic:** Corners and medians should be designed to discourage vehicles from encroaching into pedestrian areas.
- **Direct:** Facilities should offer direct routes between sidewalks, and should not require significant out-of-direction travel.

The design guidelines for intersections address corner design, curb ramps, pavement markings, traffic signals, and other issues.

appendix g: nashville-davidson county sidewalk and bikeway plan: sidewalk corridor

APPENDIX B



APPENDIX B: PEDESTRIAN FACILITIES DESIGN GUIDELINES

D. THE SIDEWALK CORRIDOR



This sidewalk on 2nd Avenue is an example of a Sidewalk Corridor in a core transect.

As shown in Figure 3, the Sidewalk Corridor is that portion of the public right-of-way located between the edge of motor vehicle, bicycle and/or parking lanes, and the outside edge of the right of way. The primary function of a Sidewalk Corridor is to provide a safe, comfortable, and convenient route for walking that is separated from vehicle movements. A Sidewalk Corridor may also accommodate other functions or fixtures, such as utility poles and street furniture.

DESIGN OBJECTIVES

The following qualities are recommended for Sidewalk Corridors:

- **Accessible:** Sidewalk Corridors are easy to use for travelers of all abilities.
- **Adequate Width:** Sidewalk Corridors allow pedestrians to pass each other comfortably.
- **Direct:** Sidewalk Corridors provide direct routes that minimize out-of-direction travel for pedestrians.
- **Continuous:** The design of Sidewalk Corridors ensures that the pedestrian path of travel is easily identifiable along the entire length of the corridor.
- **Safe:** Sidewalk Corridors provide pedestrians with real and perceived safety.

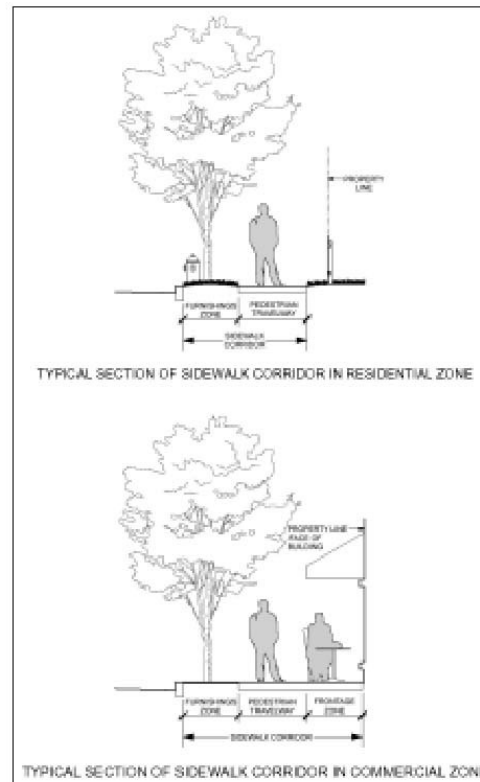


Figure 3: The Sidewalk Corridor incorporates all of the functions accommodated in the area between the curb and the edge of the right-of-way.

- **Landscaped:** Sidewalk Corridors are designed to accommodate street trees and other landscaping.
- **Compatible with the community:** A Sidewalk Corridor is designed to contribute to the land use, design, and transportation objectives of the neighborhood through which it travels.



SIDEWALK CORRIDOR ZONES

The range of functions within a Sidewalk Corridor may be best understood by dividing the corridor into three distinct areas: the Furnishings Zone, the Pedestrian Travelway, and the Frontage Zone. Each of these areas varies in width, depending on roadway classification and other factors, and is discussed in greater detail in the following sections. Since Metro roadway classifications are currently being updated, the following recommendations should be applied to any future equivalent roadway classifications.

For each roadway classification, Figure 4 shows recommended minimum widths for the three Sidewalk Corridor zones. The recommendations are based on traffic volumes, traffic speeds, and land use. In some instances, project specific judgment may determine that additional width will better achieve community goals.

LOCAL STREETS OR EQUIVALENT

Local streets are recommended to be built to the current adopted standard, with a five-foot Pedestrian Travelway and a four-foot Furnishings Zone. The five-foot sidewalk provides adequate passing space for the typical volume of pedestrian traffic on a residential street, and the four-foot buffer can sustain trees and offers a comfortable buffer from low-speed, low-volume vehicular traffic, which is desirable on such streets.

COLLECTOR STREETS OR EQUIVALENT

Collector streets have moderate to high-speed motor vehicle traffic and warrant a wider buffer between pedestrians and moving vehicles to maintain pedestrian comfort. A five-foot Furnishings Zone is recommended. Because such streets can have a lot of commercial activity and multiple destinations, it is recommended that the width of the Pedestrian Travelway be increased to six feet, to accommodate a larger volume of pedestrians.

ARTERIAL STREETS OR EQUIVALENT

Because of the density of development, mix of uses, and urban character on these streets, a high volume of pedestrian activity is expected and needs to be accommodated. Such streets

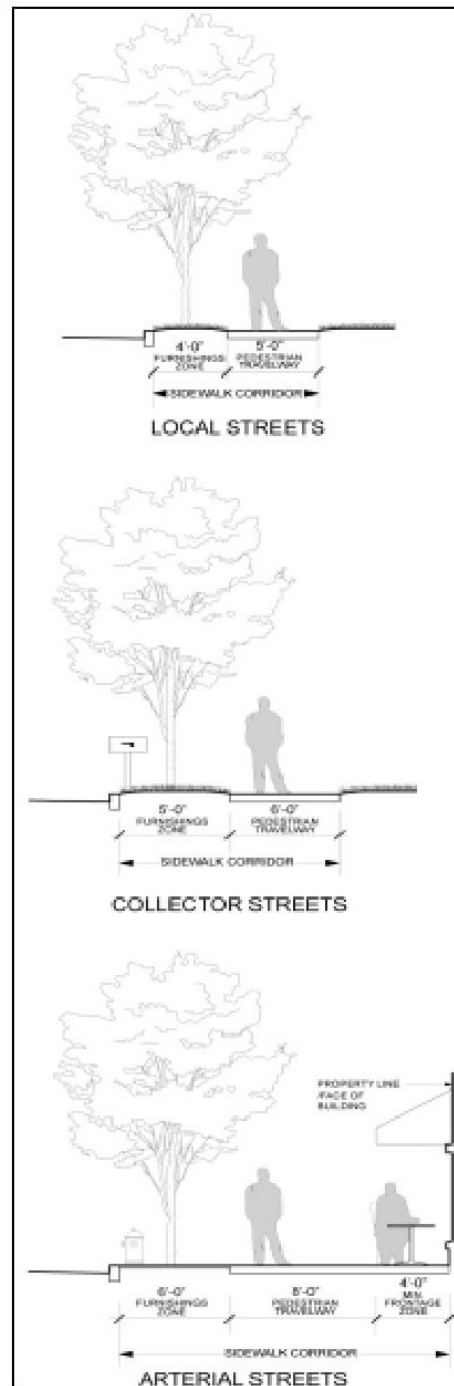


Figure 4: Recommended widths for each zone within the Sidewalk Corridor, per street classification.



will have a main street style character where sidewalks are used for many activities in addition to walking. A Furnishings Zone width of six feet will accommodate tree wells and furnishings such as benches and bike racks. To provide for heavy pedestrian traffic, an eight foot wide Pedestrian Travelway is recommended. A Frontage Zone is also recommended for this category of street. The Frontage Zone provides width for café tables, product displays, and room for people to stand and window-shop without blocking through-pedestrians. The width of the Frontage Zone may vary depending on the scale and density of development on the street, but is recommended to be at least four feet wide to accommodate one bay of outdoor seating.

Retrofit Considerations

Matching Existing Conditions

Existing sidewalks throughout Davidson County exhibit a broad range of widths and other design characteristics. The result can be a Sidewalk Corridor that changes in cross-section several times along a single street, any segment of which may not meet current standards. New and replacement sidewalks are recommended to be consistent with the cross-sections presented in this document. The net effect over time will be increased consistency of design network-wide.

It may be appropriate for a new or replacement sidewalk to match the design characteristics of existing nearby sidewalks when the new sidewalk is less than 300 feet long, and is on the same block as the existing sidewalk. Where possible, it is recommended to locate changes in cross-section at intersections. Figure 5 illustrates an appropriate design for locations in which mid-block transitions between new and existing sidewalks are necessary.

Providing Pedestrians With Their Share of the Right-Of-Way

One of the more challenging tasks of building pedestrian facilities is finding space on physically constrained existing roads. Such roadways may not be candidates for major widening projects which could incorporate pedestrian improvements, and pedestrians, bicyclists and motorists must compete for limited existing right-of-way.

When existing right-of-way precludes constructing sidewalks of the recommended widths, it may be possible to reduce curb-to-curb widths and reallocate some of that width to the Sidewalk Corridor. Providing high quality sidewalks may be worth a reduction in motor vehicle capacity on some corridors. A traffic study can determine whether lane reductions will result in an acceptable level of service for motor vehicles. Alternatively, the desirability of good quality pedestrian facilities may warrant the acquisition of additional right-of-way on some roads.

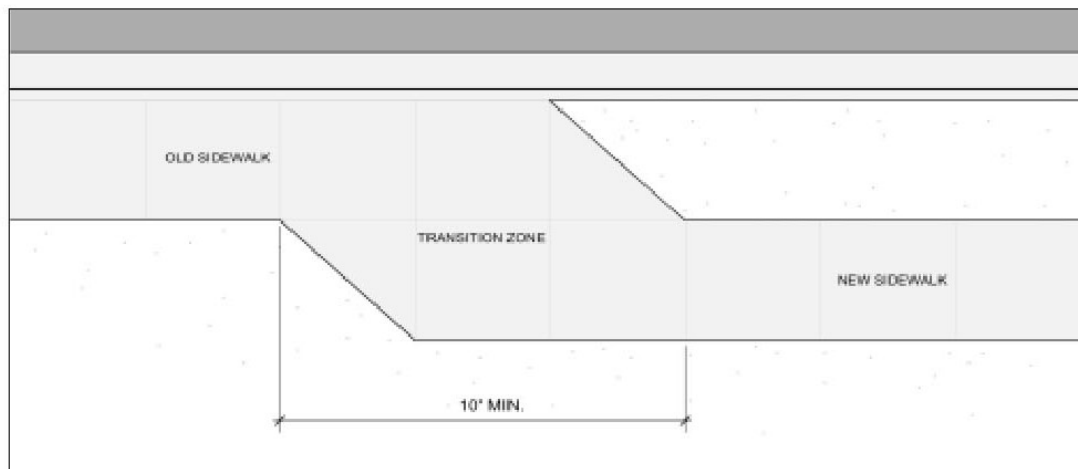


Figure 5: A transition zone is necessary when a new sidewalk and an old sidewalk meet mid-block.

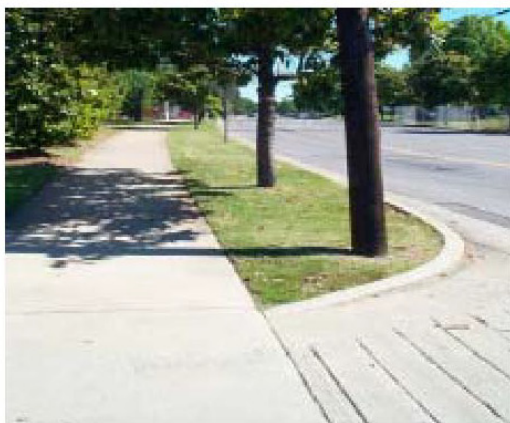


THE FURNISHINGS ZONE

Sometimes referred to as the appurtenance strip, planting strip, utility strip, or buffer strip, the Furnishings Zone actually performs all of these functions and is nearly as important in providing a good walking environment as the sidewalk itself.

The Furnishings Zone increases pedestrian comfort by providing a physical buffer between the sidewalk and vehicular traffic. Physical separation becomes more important to pedestrians as vehicular speeds and volumes increase. The Furnishings Zone also functions as an area within which most adjunct streetscape features can be accommodated. These features include utility poles, fire hydrants, signposts, newspaper racks, street trees, mailboxes, street furniture, sandwich boards, parking meters, bicycle racks, and other furnishings and objects. Providing a Furnishings Zone helps ensure that obstructions and adjunct street functions do not encroach into the Pedestrian Travelway. In addition, the Furnishings Zone can fully or partially contain the slope of a driveway ramp, making it easier to comply with ADA standards. Finally, the presence of a Furnishings Zone usually allows curb ramps to be installed on direct alignment with sidewalks and crosswalks.

Depending on roadway classification, minimum Furnishings Zone width varies from four feet to six feet. In most areas, the Furnishings Zone is seeded in grass. In a commercial district, it is



The Furnishings Zone serves many functions: as a buffer between the pedestrians and moving cars; a location for utility poles and street signs; and as a zone for street trees.

typically more desirable to accommodate trees in tree wells, and otherwise pave the Furnishings Zone to the curb to accommodate additional street functions.

Retrofit Considerations

Sidewalks without a Furnishings Zone, particularly when located on high-traffic streets, tend to offer a low quality walking experience, lacking a sense of comfort or safety. Such sidewalks often also require pedestrians to contend with multiple obstructions, and cannot be enhanced with street trees. The overall result can be a sidewalk that doesn't get much use. On constrained streets it is recommended that additional right-of-way or long-term easements are acquired to achieve to-standard Furnishings Zone width.

THE PEDESTRIAN TRAVELWAY

The Pedestrian Travelway is intended for unobstructed travel by pedestrians, exclusive of physical barriers. The Pedestrian Travelway must meet all of the requirements of the ADA, including minimum widths, maximum slopes, and freedom from obstructions.

The width of the Pedestrian Travelway can vary from five to eight feet, depending on the classification of the roadway and expected or desired pedestrian volumes. The Pedestrian Travelway should provide enough width for pedestrians to comfortably pass each other.

With or without a Frontage Zone, every Pedestrian Travelway is recommended to have an outside shoulder of at least one foot in width, with a maximum slope of 1:6, as shown in Figure 6. In some instances, providing this shoulder will require a construction easement.

Any railing, retaining wall, fence or other structural feature installed as part of a roadway project is recommended to be located at least one foot beyond the outside edge of the Pedestrian Travelway in order to maintain the full functional width of the sidewalk. In some instances, it may be desirable to pave this shoulder area.



Retrofit Considerations

On constrained Arterials and Collectors located outside of Core, Center, and Neighborhood transects, the Pedestrian Travelway width can be reduced to five feet. It is recommended that a six-foot wide Furnishings Zone is maintained for arterials, and a five-foot wide Furnishings Zone is maintained for collectors.

Fixed, Metro-owned obstructions, such as street signs and fire hydrants are recommended to be moved to the Furnishings Zone during retrofit. Arrangement for utility poles to be relocated to the Furnishings Zone, or otherwise outside of the Pedestrian Travelway is also recommended. See related pole relocation policy recommendations in Appendix J.

Technically, a bus bench is not a fixed obstruction and does not conflict with ADA, but in practice, bus benches can function as obstructions that violate the spirit of ADA. On constrained streets, it would be desirable to obtain additional right-of-way or long-term easements to accommodate bus benches and shelters outside of the Pedestrian Travelway, and in either the Furnishings Zone or the Frontage Zone.

In some instances, the obstruction in a Sidewalk Corridor is a street tree. Because trees enhance the pedestrian environment, it is recommended that any mature, healthy street tree that has been included on the list of approved trees in Metro's tree ordinance is retained if possible dur-



The Pedestrian Travelway should not contain any obstructions and be wide enough to allow people to pass comfortably.

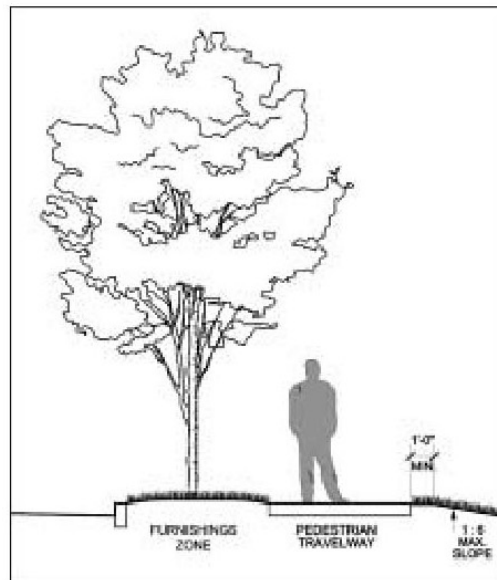


Figure 6: The Pedestrian Travelway should include an outside shoulder.

ing sidewalk retrofit. Sidewalk realignment to retain a good street tree is usually of net benefit to pedestrians.

It is recommended that the clear width of the Pedestrian Travelway be at least four feet wide.

THE FRONTAGE ZONE

On some roadways, the Frontage Zone is the area between the Pedestrian Travelway and the edge of the right-of-way, and provides space for adjacent functions, such as obstructions, sidewalk cafes, window shopping, and product displays, where allowed by Metro Code.

On non-commercial streets with a Frontage Zone, tall and bulky obstructions, such as utility poles and signal boxes are recommended to be consolidated into the Frontage Zone. Doing so keeps the obstructions from creating visibility problems, and increases the likelihood that trees can be provided in the Furnishings Zone. On urban commercial streets with storefronts, the Frontage Zone would ideally be kept clear in order to function as space for window shopping functions as described previously.

appendix h: nashville-davidson county sidewalk and bikeway plan: intersections



APPENDIX B

APPENDIX B: PEDESTRIAN FACILITIES DESIGN GUIDELINES

E. INTERSECTIONS



Crosswalks should be marked clearly at all intersections.

In addition to being able to comfortably walk along a roadway, it is equally important for pedestrians to be able to safely cross a roadway. By nature, intersections place one group of travelers in the path of others. Walking travelers often find themselves with a lack of accommodations and guidance where they are at the greatest risk.

Rather than functioning as a barrier between sidewalk segments it is desirable for the design of corners, crosswalks, and other intersection features to provide a seamless pedestrian facility.

At signalized intersections, pedestrians have the right-of-way when they are crossing with the green light. The Metro Code also addresses pedestrian crossings at locations other than signalized intersections. The code states that pedestrians always have the right-of-way at unsignalized intersections regardless of whether or not the crosswalk has pavement markings. Pedestrians also always have the right-of-way at mid-block crosswalks, which by definition include pavement markings. The design of intersections is recommended to acknowledge and reinforce operational regulations.

Retrofit Considerations

Integration of pedestrian improvements to intersections, where needed, are recommended for sidewalk retrofit projects. If intersections remain barriers to pedestrian travel along a new Sidewalk Corridor, the new sidewalk may not get as much use as possible, or may increase pedestrian traffic at intersections or mid-block crossings that are not designed to safely accommodate them.

In some instances, crossing facilities and other pedestrian improvements will be warranted at intersections on streets where the sidewalks themselves do not require upgrade.

DESIGN OBJECTIVES

It is recommended that all intersections be designed with an assumption that pedestrians will be present. The following characteristics are recommended for the intersection designs:

- **Short Crossings:** In general, curb-to-curb crossing distance is as short as possible.
- **Highly Visible:** Pedestrians are easy for motorists to see, and vice versa.
- **Obstruction-free:** Corners are free of obstructions that reduce visibility and accessibility.
- **Adequate Size:** Corners are large enough to accommodate sidewalk ramps, landings, transit stops, and the expected volume of pedestrians.
- **Obvious:** Signs, markings and signals clearly indicate to pedestrians, motorists and bicyclists how, where, and when right-of-way users will operate.
- **Accessible:** Ramps, landings, pedestrian pushbuttons, and other features are easy to use for travelers of all abilities.
- **Separate from traffic:** Corners and medians are designed to discourage vehicles from encroaching into pedestrian areas.
- **Direct:** Facilities offer direct routes between sidewalks, and do not require significant out-of-direction travel.



CORNERS

MINIMIZING OBSTRUCTIONS

Corners must accommodate a range of pedestrian activities, concentrations of pedestrians, and other pedestrian-related physical features such as curb ramps, landings, and pushbutton posts. In addition, sight lines between pedestrians and vehicle operators must remain clear for safe interaction. Furthermore, pedestrians' attention should be focused on vehicular activity and signals, rather than avoiding obstacles.

In general, an obstruction-free area, as shown in Figure 9, is recommended for the space between the curbs and a continuation of the adjacent property lines, or within ten feet of an intersection, at a minimum. Except for pushbutton posts and other pedestrian enhancements, it is recommended that no vertical or surface features encroach into this area.

Retrofit Considerations

While the removal of existing fixed obstructions along an entire Sidewalk Corridor may not be

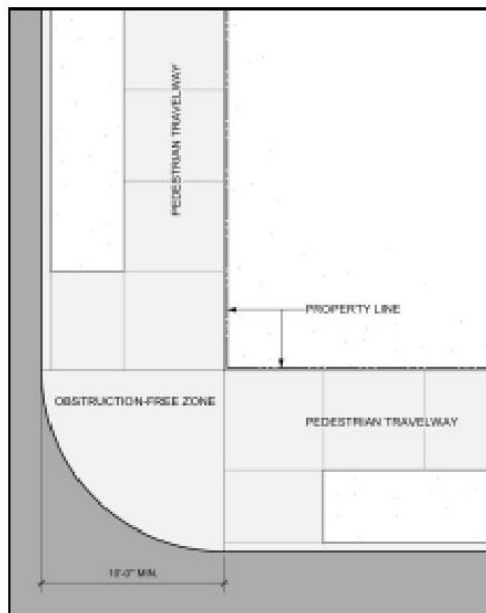


Figure 9: Street corners should be obstruction-free.

feasible, the range of functional and safety concerns at an intersection warrants selective relocation of utility poles, signal boxes, hydrants, street signs, and other obstructions at corners.

CURB RADIUS

As shown in Figure 10, a shorter curb radius can significantly reduce the amount of time that a pedestrian is in the roadway and in potential conflict with vehicles. The shorter the crosswalk, the safer for pedestrians. A tighter radius also provides more space at corners, better visibility and sightlines, allows more flexibility in the placement of ramps, and reduces vehicular turning speed.

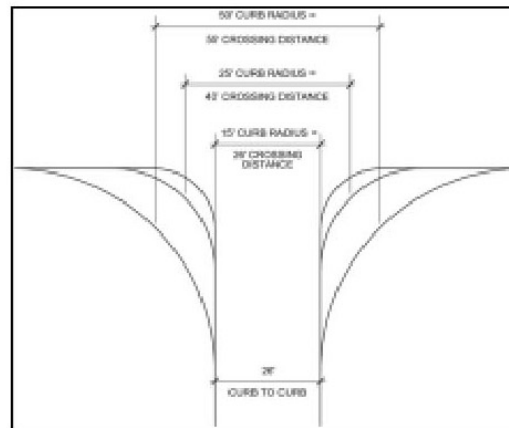


Figure 10: The shorter the curb radius, the shorter the street crossing distance for pedestrians.

The curb radius should be no greater than that needed to accommodate the turning radius of vehicles expected to use the intersection. Arterial streets with a high volume of truck or bus traffic may warrant a 25-foot or greater radius. However, AASHTO's *A Policy on Geometric Design of Highways and Streets* states that "for arterial street design, adequate radii for vehicle operation should be balanced against the needs of pedestrians and the difficulty of acquiring additional right-of-way or corner setbacks." As illustrated in Figure 11, the presence of on-street parking or bicycle lanes results in a longer effective turning radius at an intersection. This is an effective way to minimize the curb radius, but still provide adequate turning paths for large vehicles.

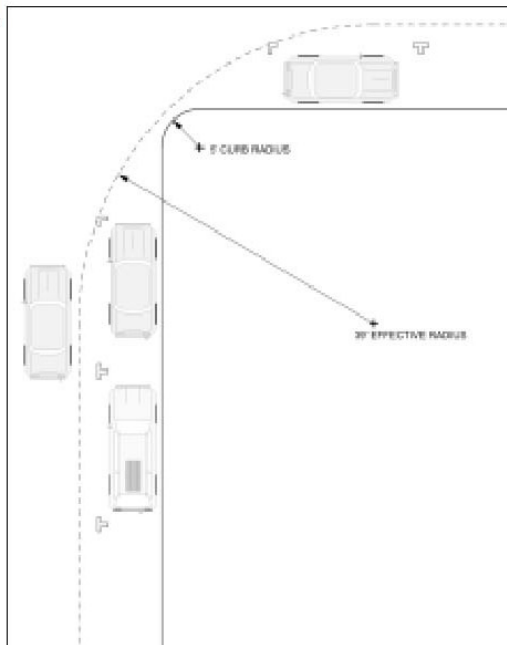


Figure 11: The presence of parking lanes or bicycle lanes significantly increases the effective turning radius, allowing the actual curb radius to be reduced to less than fifteen feet for many applications.

Retrofit Considerations

As part of the routine intersection improvements that should occur during sidewalk retrofit, it is recommended that curb radii be reduced to the minimum length necessary where physically feasible. Doing so will result in an improved pedestrian environment.

CURB RAMPS

Curb ramps allow sidewalk users to make the transition from sidewalks to the street grade. Ramps are especially important for those with limited mobility, wheelchairs, and baby strollers. Like all other sidewalk features, curb ramps must meet ADA standards. Metro's current ramp design standards meet ADA. The recommendations below relate to the number and location of ramps.

Number and Location of Ramps

In general, a curb ramp is recommended for each crosswalk at a corner, as shown in Figure

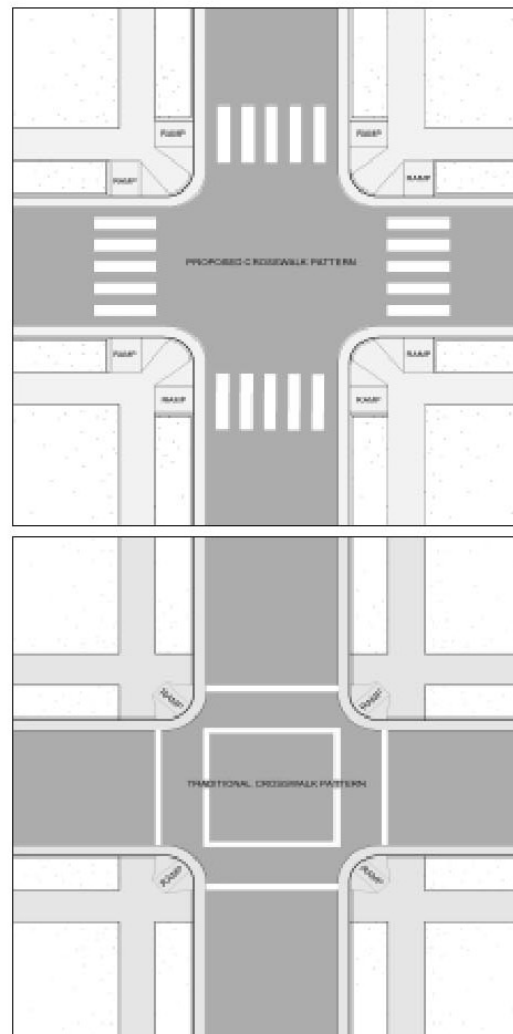


Figure 12: To ensure that crossing distances are minimized and that ramps are on the same alignment as crosswalks, corners should include curb ramps for both crosswalks, as shown at top. Diagonal curb ramps, as shown at bottom, require wheelchair users to re-align their wheelchair while in the street in order to remain in the crosswalk.

12. Although separate curb ramps are preferred, in some cases, diagonal ramps will be required because of intersection geometrics or other considerations. Diagonal ramps are acceptable per ADA and in some cases, existing



conditions will dictate diagonal ramps. However, there are disadvantages associated with diagonal ramps. A diagonal ramp shared by both crosswalks diverts the casters on a wheelchair toward the center of the intersection, where the user must then re-orient the chair back on alignment with the crosswalk. This circumstance creates maneuvering problems at the same moment in which the user must also be watching for on-coming traffic. In contrast, a two-ramp corner allows each curb ramp to be on direct alignment with the crosswalk.

In addition, a diagonal ramp can make it harder for pedestrians to see right-turning vehicles.

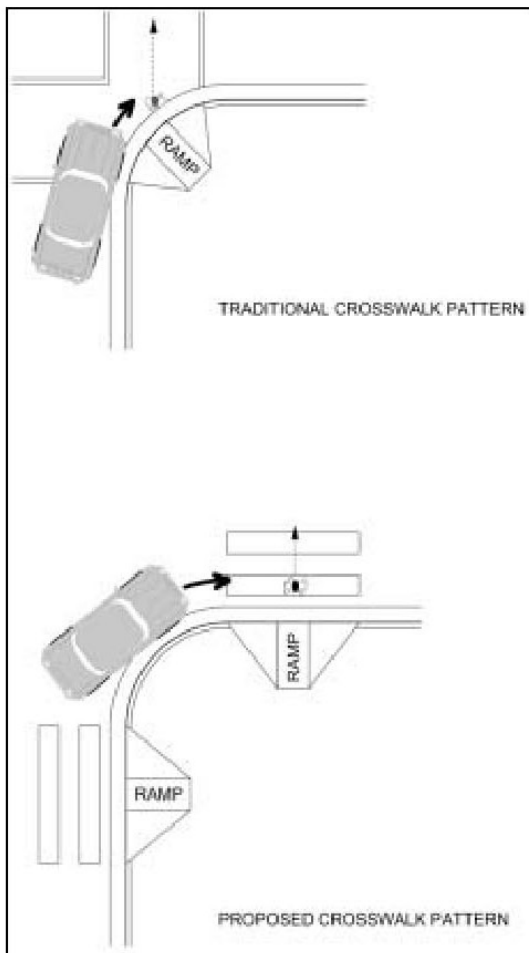


Figure 13: With diagonal curb ramps, cars approach from behind, rather than beside, as with a two-ramp corner.

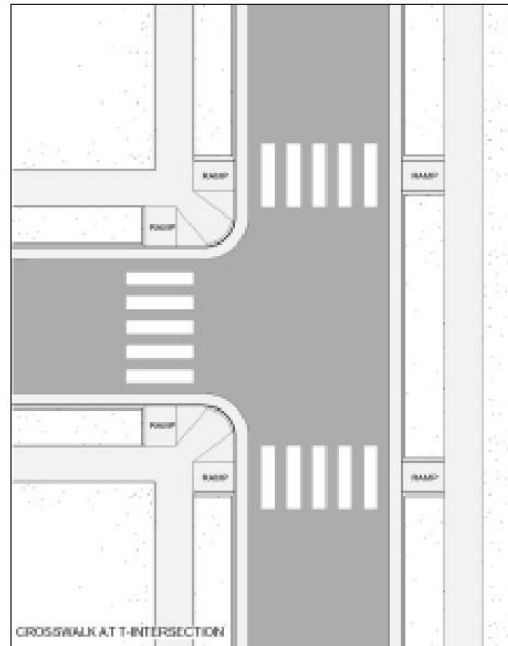


Figure 14: Since legal crosswalks are located at each leg of a T-intersection, so, too, should curb ramps.

Right turning vehicles will approach pedestrians from the rear, rather than the side, as is the case with most two-ramp configurations, as shown in Figure 13. Furthermore, a diagonal ramp typically requires more crossing time and distance than a two-ramp corner, which increases the potential for pedestrian/vehicle conflicts and increases motor vehicle delay.

Like four-way intersections, crosswalks are present at every leg of a T-intersection regardless of whether or not pavement markings are present. For this reason, it is recommended that ramps are also installed at each end of every crosswalk at T-intersections, including the top-bar, as shown in Figure 14.

Retrofit Considerations

Efforts should be made to provide two ramps at corners wherever feasible. Techniques that may facilitate this include reducing the curb radius and installing curb extensions.

A recurring problem has been that the most constrained corner of an intersection usually



dictates the location of the ramps at all corners.

For example, as shown in Figure 15, the presence of a single storm drain or other obstruction that forces a diagonal ramp at one corner results in diagonal ramps at all corners. Instead, the selective relocation of storm drains, utility poles and other obstructions will maximize the opportunity for two ramps at every corner. In some instances, crosswalk locations will have to be adjusted to be on alignment with ramps.

CROSSWALKS

Like corners, the design and function of crosswalks significantly affects the ability of a pedestrian to safely travel across a street.

A well-designed crosswalk will attract pedestrians because the safety and convenience advantages of crossing at that location will be evident. The crossing distance will be minimal, the crossing time will be adequate, and it will be clear to both pedestrians and drivers when and where the other has the right-of-way.

In contrast, a pedestrian may go out of the way to avoid an intersection with inadequate pedestrian accommodations. Long crossing distances, short crossing times, and lack of pedestrian sig-

nals can leave a pedestrian without any guidance as to when it is safest to cross. The movements of cars are often unpredictable and the pedestrian is left feeling vulnerable. At such intersections, a pedestrian may instead choose to cross mid-block, where it is easier to gauge the speed of approaching vehicles, and cross when the crossing opportunity is optimal. While such a solution may feel safer, it is a poor option, especially for children and senior adults, and discourages walking for everyone.

As well as the design objectives previously discussed, which apply to all intersection features, it is recommended that crosswalks have the following additional characteristics:

- **Frequent:** Crosswalks are located at frequent enough intervals to ensure that pedestrians do not have to travel significantly out of direction to cross a street.
- **Prompt:** At signalized intersections, pedestrians do not have to wait an unreasonable period of time before being given an opportunity to cross.
- **Minimal exposure:** Crosswalks are designed with the fewest possible conflict points with traffic and a short crossing distance, or be divided into short multiple crossing segments.
- **Direct:** Crosswalk markings are on align-

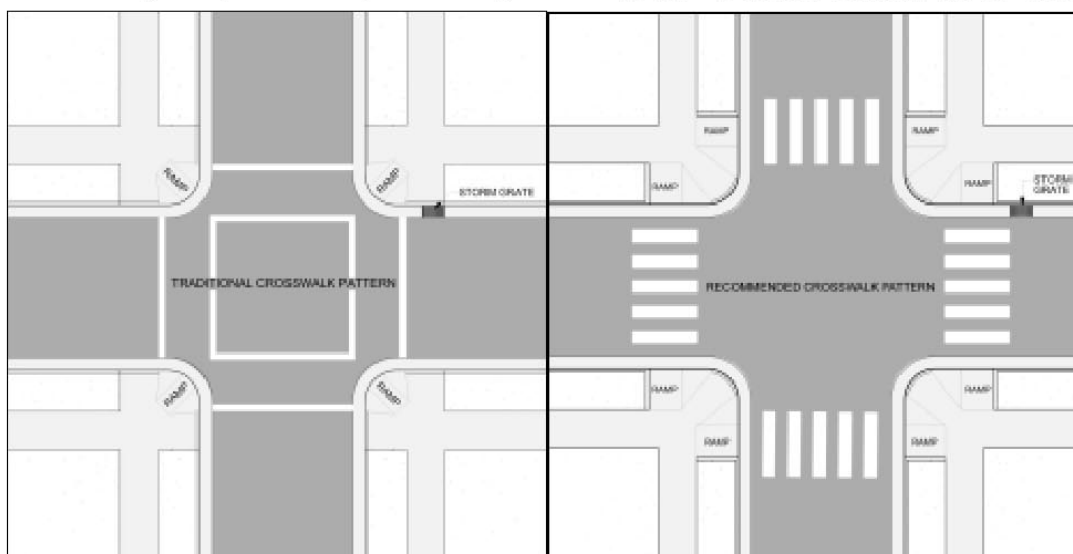


Figure 15: When an obstruction, such as a storm grate, conflicts with the ability to install two curb ramps per corner, as shown at left, the obstruction can be relocated, as shown at right.



- Adequate crossing time: The time provided at signalized intersections to cross the roadway needs to be adequate for sidewalk users of all abilities.

GENERAL DESIGN CONSIDERATIONS

Installation of crosswalk markings are recommended for each leg of intersections on

- Arterial and Collector streets
- Signalized intersections on all street classifications
- Local streets near schools, parks and other locations with high pedestrian activity

It is recommended that crossing prohibitions only be considered in very limited circumstances, such as where it would be extremely dangerous for pedestrians to cross due to severely limited sight distance, or other safety constraints.

The method of marking a crosswalk impacts visibility, ADA compliance and other issues. In general, crosswalks marked with brick or cobblestone pavers alone are less visible to motorists than those marked with reflective white thermoplastic tape, particularly at night or during rain. When pavers are used, reflective tape is recommended to be considered for use in conjunction. Bumpy paving materials such as cobblestones can be noisy and create problems for bicyclists, pedestrians and those with limited mobility.

Pavement markings have typically been the only design tool applied to crosswalks. In fact, markings are just one option in a progression of design treatments. Any combination of pavement markings, curb extensions, pedestrian refuges, signal improvements, and other techniques should be taken into consideration when determining the best treatment at a given crossing.

FREQUENCY OF CROSSING OPPORTUNITIES

Generally, pedestrians will not travel significantly out of direction in order to cross a roadway. This tendency is even more pronounced when the pedestrian perceives that the design of an out-of-direction crosswalk will not offer additional safety benefits. Instead, pedestrians will cross where it is most convenient, or perceived to be the safest.

The distance between safe opportunities to cross a street is recommended to be proportionate to the frequency of uses along the street that generate crossing movements. In areas with a lot of commercial activity, mixed uses, high or medium density, bus stops, schools, parks, or libraries, crossing opportunities should be frequent. In general, such streets are recommended to have well-designed pedestrian crossing facilities spaced at intervals of no less than 300 feet. In low-density areas with single land uses, good crossing opportunities may be less frequent.

Retrofit Considerations

On many existing streets, the distances between intersections with pedestrian accommodations are great and their designs sometimes offer few safety advantages. Older commercial arterial and collector streets can be problematic. Located in densely developed areas with residential and commercial uses in close proximity, these streets have high levels of pedestrian activity and heavy traffic. As sidewalks are retrofitted or replaced on these and all streets, installation of crossing facilities is recommended at appropriate intervals.

MID-BLOCK CROSSWALKS

Providing marked crosswalks at mid-block locations is viewed by many pedestrians as an effective way to improve pedestrian safety. However, studies have shown that mid-block crosswalks, if inappropriately used, can actually create more safety problems than they solve. Nevertheless,



Mid-block crosswalks may be appropriate where there is a significant demand for crossing and no nearby intersection crosswalks exist.